INNOVATIVE SUBDIVISION DESIGN

September 1983

Prepared By:

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The views and conclusions expressed and the recommendations made in this report are entirely those of the authors and should not be construed as expressing the opinions of the Alberta Department of Housing.

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Alberta
DEPARTMENT OF HOUSING

Innovative Housing Grants Program

INNOVATIVE SUBDIVISION DESIGN

Tritek Engineering Ltd.

Introduction

This innovative subdivision design suggests that it is possible to increase the utilization of land for housing through the reduction of land dedicated for roadways. The concept presented is flexible enough to be used for all detached and semi-detached housing and can be adapted to higher densities if so desired. In this innovative design four rows of lots are created between public circulation routes instead of the traditional two rows. Access is gained into the centre two lots through a common driveway.

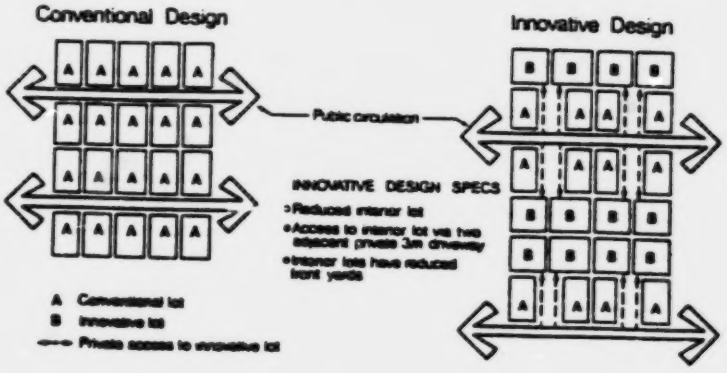

Figure 1. Innovative Design Specs

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Report: 28 Pages

Study Approach

The study was carried out in two phases. The first phase includes the selection of an existing subdivision design providing a frame of reference for the preparation of a planning and engineering assessment, a qualitative analysis, and preliminary cost analysis of the innovative subdivision design. The second phase includes a review of the concept with the approval authorities.

Spacial Relationships

Elements of the conventional lot include a semi-public entry, ornamental front yard, the home, and a semi-private exterior space. The ornamental front yard usually takes up about 25% of the lot and generally only adds to the attractiveness of the public roadway.

The living area of the unit is normally oriented towards the street but there is seldom any integration between the house and activities conducted within the front yard. The semi-private back yard is used extensively for outdoor activities.

The spacial relationships established within the innovative lot design differ from the conventional lot. The semi-private front entrance permits the possible reduction of the "ornamental front yard" into a compact functional space. The living area of the housing unit can be oriented toward the "entry" yard or the semi-private "back" yard.

The most significant aspect of the innovative subdivision design is the reduction in roadway area (25% less) and an increase in the number of lots (by 10%).

Conclusion

- This design has the potential of providing a 12 to 15 percent cost saving on the price of the lot. This could increase with zero lot line and semi-detached units being used in the subdivision.
- There is a significant improvement in the house-to-lot relationship, particularly with the interior lots.
- On-site maintenance could be significantly reduced through reducing the size of the ornamental front yard, although problems of snow removal from the communal driveways would increase.
- The resulting streetscape is more open but the layout results in a more compact clustering of houses (a mini cul-de-sac).

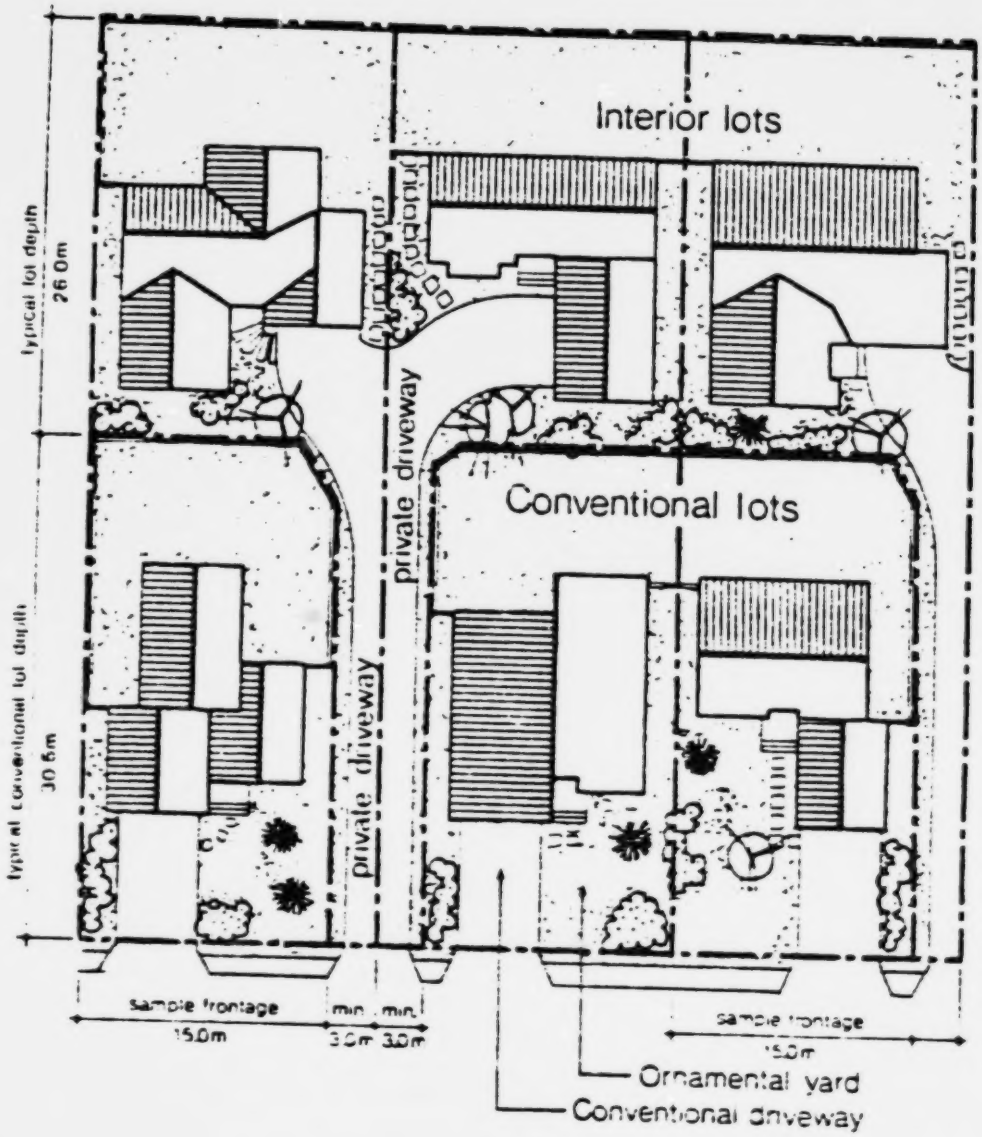

Figure 2. Elements of Innovative Subdivision Design

FOREWORD

This study was made possible with funding provided by the Innovative Housing Grants Program of the Alberta Department of Housing. Originally conceived in 1978, the Program is intended to encourage, sponsor, and assist research and development in the fields of housing, site and subdivision design, energy conservation, site servicing and urban development. Generally, the aims of research funded by the Innovative Housing Grants Program are to reduce housing costs, increase the supply of appropriate housing or improve the utility or performance of dwelling units or subdivisions.

The main purpose of funding these studies is to examine the current issues in the field of housing and to develop innovations which offer improvements. Comments and suggestions regarding the information contained in these reports are welcome.

Innovative ideas come from a wide variety of applicants such as builders, developers, consulting firms, industry associations, municipal governments, educational institutions, non-profit groups and individuals. As the type of project and level of resources vary from applicant to applicant, the resulting documents are also varied.

Where possible the Department encourages the dissemination of study results under a standard cover and in a uniform format. This study, Innovative Subdivision Design, was completed in July 1982 and subsequently released under a different cover.

Please send comments and suggestions or requests for further information to:

Innovative Housing Grants Program
Fourth Floor
10050 - 112 Street
Edmonton, Alberta
T5K 2J1

Alberta Department of Housing
September 1983

RESEARCH GRANT FOR
INNOVATIVE SUBDIVISION DESIGN

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SECTION 1

1.0 INTRODUCTION

This study summarizes the findings of a research and development project that is intended to investigate and develop an innovative subdivision design concept. The project is funded by Alberta Housing and Public Works through an innovative housing grant.

1.1 THE INNOVATIVE DESIGN CONCEPT

The concept being investigated is presented in Figure I. Basically the design increases the utilization of land for housing units through an innovative design concept by the reduction of land dedicated to roads. The proposed concept is flexible in nature and can be applied successfully to all detached and semi-detached housing types. This concept can be adapted to apply to higher densities, although this application has not been investigated within this report.

1.2 PURPOSE OF STUDY

The purpose of this study is to undertake detailed planning and engineering studies for a specific parcel of land and to establish the acceptability of the concept by current approval authorities.

1.3 SCOPE OF STUDY

The scope of this study is limited to the assessment of the economic feasibility of the innovative design concept based solely on a detailed technical analysis and a review of the acceptability of the concept by the approving authorities.

Investigation of public acceptance of this concept is beyond the scope of this study and will be carried out subsequent to the completion and verification of the viability of the proposed concept.

1.4 STUDY APPROACH

The study has been divided into two major phases. The first phase includes the preparation of a planning and engineering assessment, a qualitative analysis, and preliminary cost analysis. The second phase includes a review of the concept with the approval authorities.

1.5 TERMS OF REFERENCE

The terms of reference for this study are presented below:

Phase I

a) Site Selection - select an existing subdivision design for the purpose of providing a frame of reference for the evaluation of the innovative design concept.

b) Preparation of Innovative Subdivision Design - prepare an innovative design for the selected parcel of land and generate land use data.

c) Engineering Analysis - prepare an engineering design and cost analysis and finalize economic benefits of the concept.

d) Interim Report - Phase I - Prepare and submit interim report summarizing Phase I findings to Alberta Housing and Public Works.

1.5 TERMS OF REFERENCE (Cont'd)

Phase II

a) Qualitative Analysis - prepare a detailed site design for a portion of the innovative subdivision concept in Phase I and carry out an overview of the social implications of the design.

b) Concept Approvals - review concept with approval authorities including City of Edmonton, the Yellowhead Regional Planning Commission and Alberta Municipal Affairs.

c) Interim Report - Phase II - prepare a report on findings of Phase II to Alberta Housing and Public Works.

Final Report - a final report is to be prepared, summarizing the findings of the study and submitted to Alberta Housing and Public Works.

1.6 ASSUMPTIONS

The general assumptions for this report are presented as follows:

1.6 **ASSUMPTIONS** (Cont'd)

Planning

- All conventional standards including road right-of-way widths and lot sizes and areas will apply for the conventional lots in this study.

- The innovative subdivision design will conform with conventional park dedication requirements.

- Arterial roadways will not be included in the calculations for either the conventional or innovative subdivision designs.

- An innovative design prepared for an entire residential neighbourhood will provide a realistic comparison for the purpose of this study.

Engineering

- Topography of site is assumed to be suited for the installation of servicing. All services are capable of being installed with a minimum of 1% grade.

1.6 **ASSUMPTIONS** (Cont'd)

- Additional specific assumptions are presented within each section of the report.

- Conventional servicing standards are based on the City of Edmonton standards and are identified in Appendix I.

General Assumptions

- All cost savings identified in this study will be passed onto the home owners either directly in the form of reduced housing price or indirectly through a better quality product.

SECTION 2

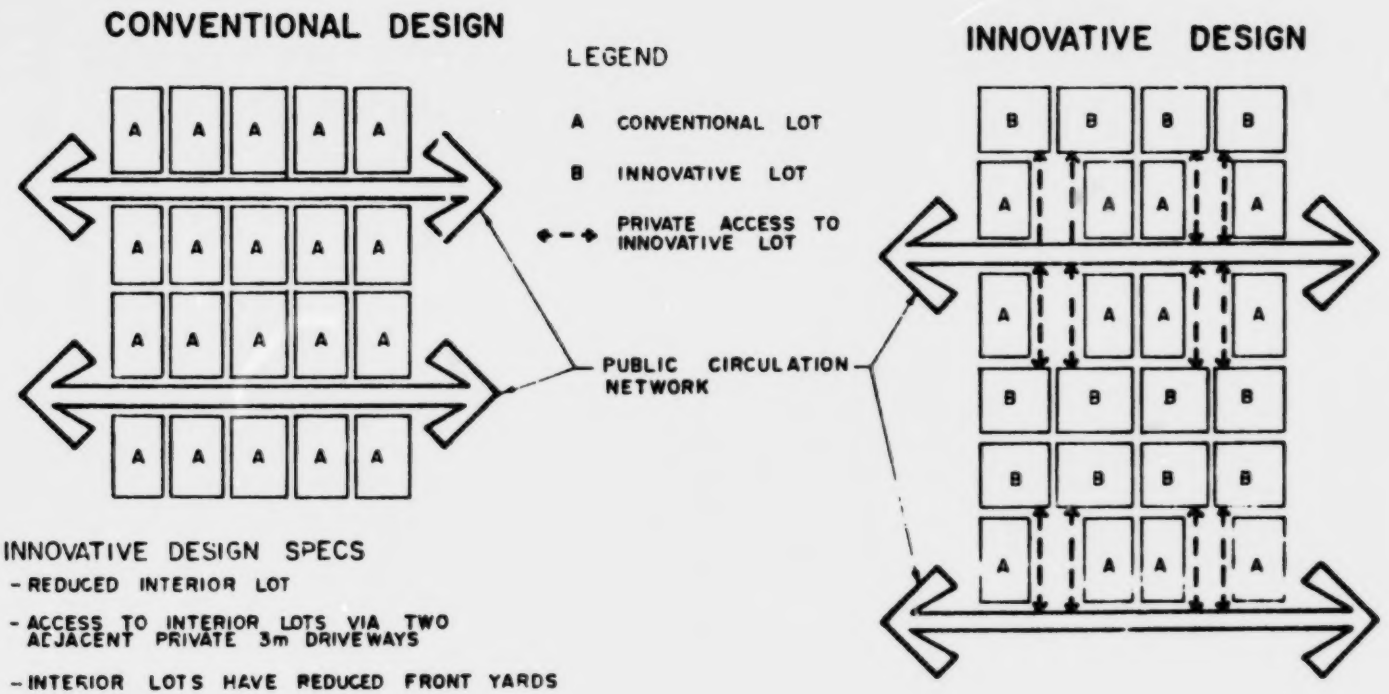
2.0 CONCEPT DEVELOPMENT

2.1 INTRODUCTION

As previously identified the innovative subdivision design concept consists of the reduction of land required for road right-of-ways and the increase of land used for residential purposes. Within a conventional subdivision design all lots have at least one property line adjacent to a public street. The innovative subdivision design proposes interior lots without the conventional lot boundaries directly adjacent to a public street. Lot/unit access from a public street is provided through a privately owned driveway for each interior lot. A graphic depiction of both the conventional subdivision design and the innovative design are presented in Figure 1.

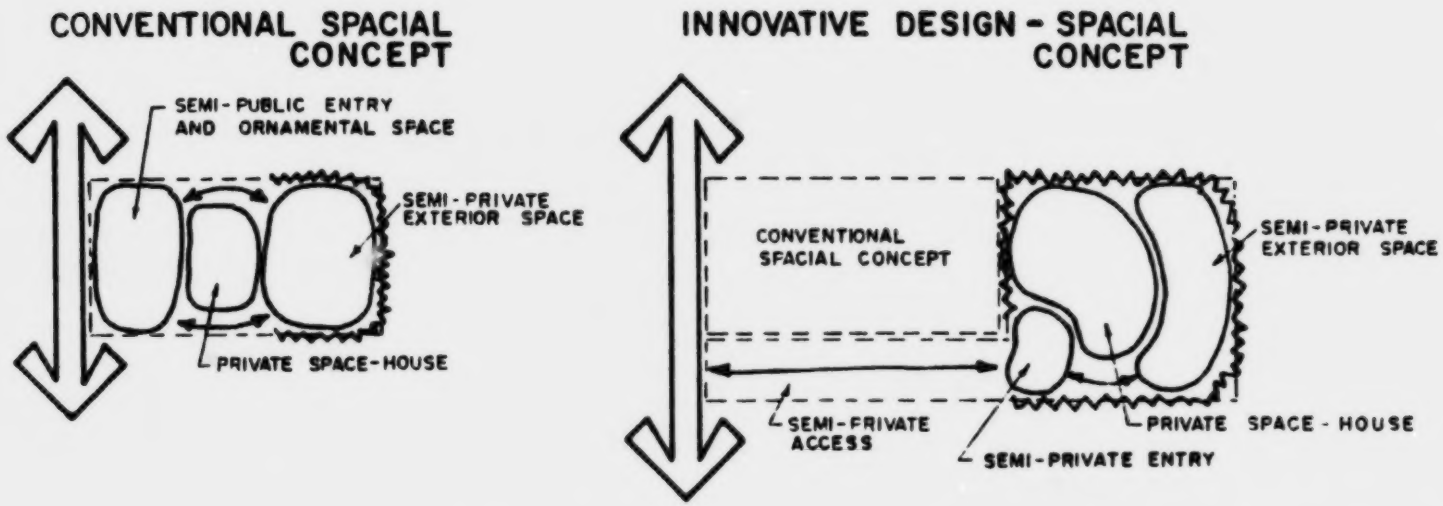
2.2 SPACIAL RELATIONSHIP FOR LOTS

The functions and spacial relationships of the conventional and innovative interior lots are present graphically in Figure 2.


CONVENTIONAL DESIGN
LEGEND
A CONVENTIONAL LOT
B INNOVATIVE LOT
PRIVATE ACCESS TO INNOVATIVE LOT
PUBLIC CIRCULATION NETWORK
INNOVATIVE DESIGN
INNOVATIVE DESIGN SPECS
- REDUCED INTERIOR LOT
- ACCESS TO INTERIOR LOTS VIA TWO ADJACENT PRIVATE 3m DRIVEWAYS
- INTERIOR LOTS HAVE REDUCED FRONT YARDS

INNOVATIVE DESIGN CONCEPT

FIGURE 1



SPACIAL RELATIONSHIPS

FIGURE 2

2.2 SPACIAL RELATIONSHIP FOR LOTS (Cont'd)

A conventional lot consists of a semi-public entry - ornamental front yard, a private area (the home) and a semi private exterior space. The front yard, with its semi-public nature, tends to encourage a minimum of use by the resident. This space occupies a major portion of the lot, up to 25% of the area, and generally adds to the enhancement of the public residential roadway. Its existence is as beneficial to the user of the public roadway as it is to the resident.

The private space - dwelling unit - within the conventional lot provides total privacy for the resident. The living area of the unit is normally oriented towards the front yard. However, very seldom is there any integration of the house with the front yard.

The semi-private back yard is used extensively for out-door activities, by the resident. This yard, in some cases, is integrated physically with the house.

The spacial relationships of the innovative lot design deviate from the conventional lot. As a result, significant alterations will occur for the future resident. The most significant change occurs in the semi-private nature of the front entry. This permits the possible reduction of the ornamental front yard into a

more compact functional space. The orientation of the living area of the housing unit can be altered to focus on the semi-private back yard, thus permitting a better integration of the housing unit with this yard space. The semi-private entry may form an excellent play area for the children of the two adjoining residents.

A typical design for the innovative lots is presented later on in this report as Figure 6.

SECTION 3

3.0 SITE SELECTION

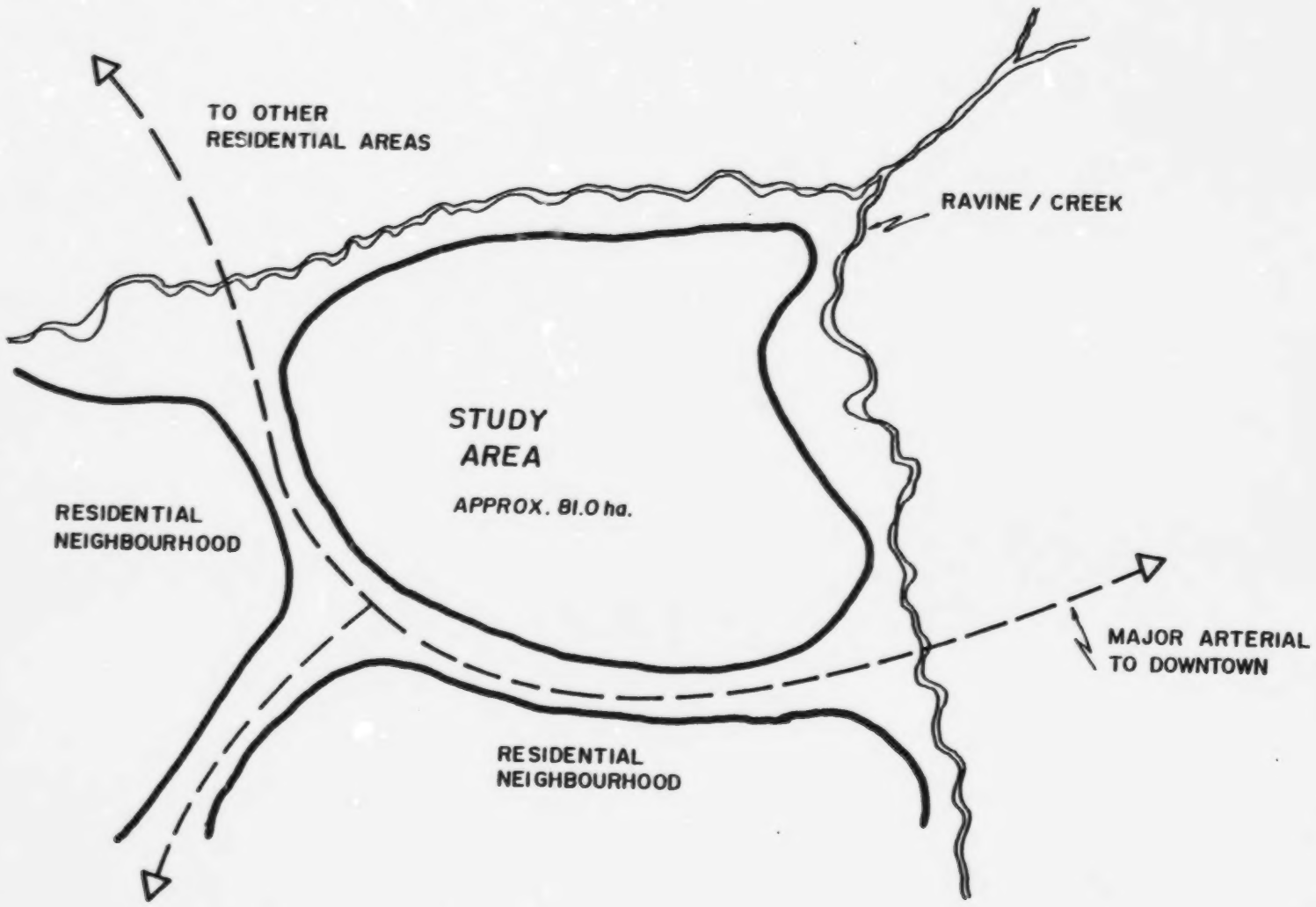
In order to assess the viability of the innovative subdivision design concept, a sample of a conventional subdivision design has been selected as a bench mark. A number of existing and proposed subdivisions were reviewed to determine their appropriateness for this study. Initially it was anticipated that a 12.25 hectare (30 acre) to 24.50 hectare (60 acre) parcel would be required for the comparison. However, due to the nature of the innovative design concept, an entire residential neighbourhood, with an area of approximately 81 hectares was selected. It was decided that a more realistic comparison would be achieved if the innovative design was prepared for an area that contained such land uses as school sites, commercial area, normal park dedication, and residential collector roadway.

The parcel selected was the Dickensfield subdivision in Fort McMurray. This subdivision was designed and built in 1980 and therefore represents a relatively recent plan. The original plan was prepared by the author of this report. The relatively modular design used initially for the conventional plan and the

3.0 SITE SELECTION (Cont'd)

use of the same designer for both plans supports the validity of the comparison to be made between the two plans.

For the purposes of this study it has been assumed that the neighbourhood selected is in the Edmonton area and that the Edmonton Development Regulations and Standards are used for this plan. The topography consists of 1% grades. Soil conditions and the water table are condusive to development. All off-site trunk facilities, including the arterial roads, are constructed to the edge of the parcel. Figure 3 identifies the theoretical location of the site.



LOCATION

FIGURE 3

SECTION 4

4.0 PLANNING

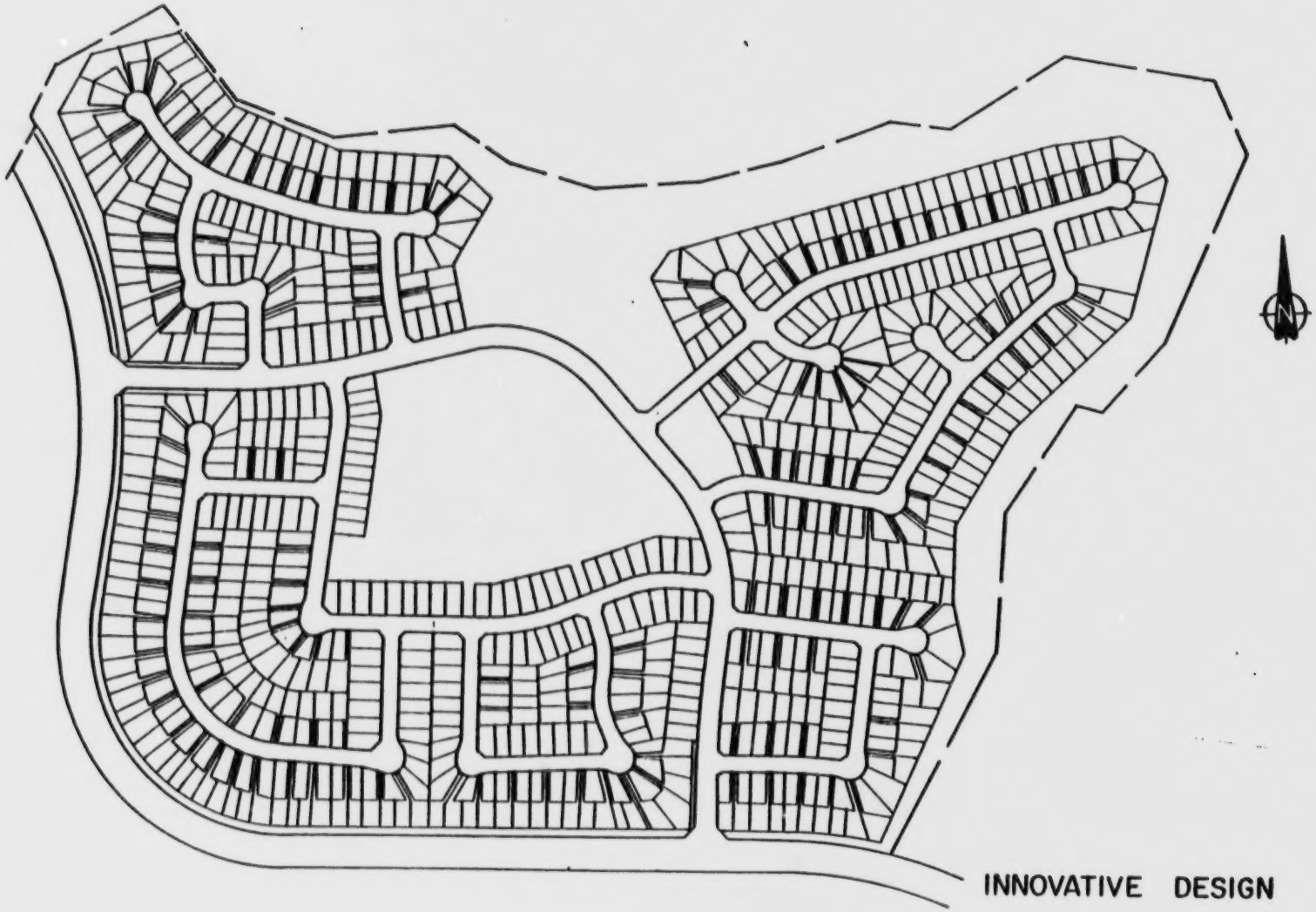
The subdivision plans for the conventional and innovative design concept are presented in Figures 4 and 5. In order to maintain consistency it has been assumed that both designs contain only single family lots that are 15 m x 35 m. The school site, park area, commercial, church site, and internal collector roadways are identical for both plans. The arterial roadway forming the boundary on the south and west side of the plan is excluded from the site, land use, and engineering calculations.

The neighbourhood design for the innovative design is based on the detailed lot plan presented in Figure 6. This design includes a minimum of two adjacent drives to the interior (innovative) lots, to ensure adequate access for fire protection, and the reduction of the "front yard" for the interior lots to a minimum of 3 metres.

Table I identifies the land uses generated by each of the two alternative designs. Table II identifies the ratio of conventional lots to innovative lots within the innovative design.

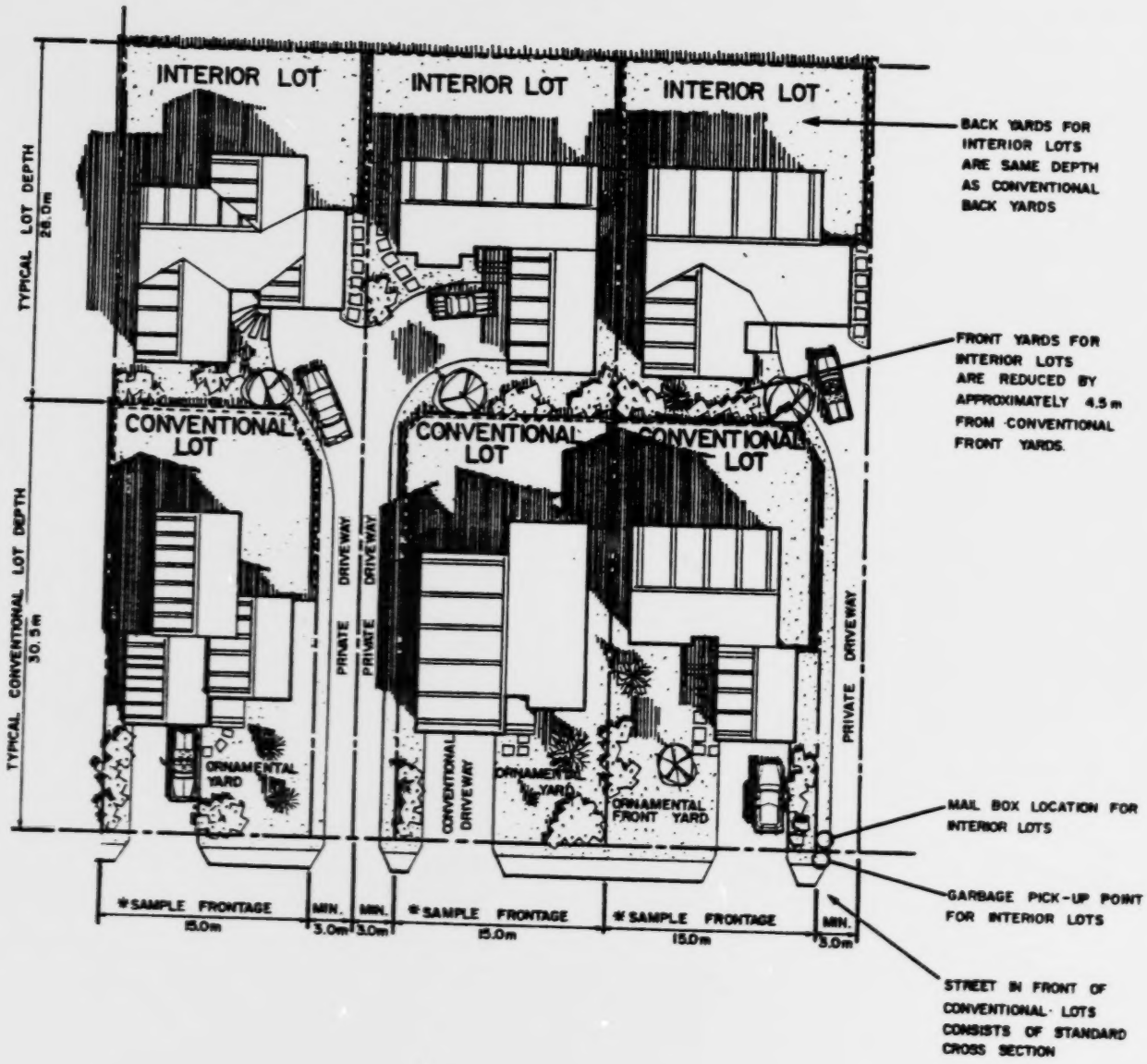
CONVENTIONAL DESIGN

FIGURE 4



INNOVATIVE DESIGN

FIGURE 5



TYPICAL LOT LAYOUT DETAIL

FIGURE 6

TABLE I - LAND USE COMPARISONS

	CONVENTIONAL SUBDIVISION DESIGN		INNOVATIVE SUBDIVISION DESIGN		PERCENTAGE CHANGE (Conventional Subdivision = 0)	
	area (ha)	%	area (ha)	%	area (ha)	%
Single family and semi-detached*	44.616	60.6%	48.494	65.9%	+3.878	+ 8.7%
Multi-family sites	2.433	3.3%	2.433	3.3%	0	0
Comercial	0.669	0.9%	0.669	0.9%	0	0
School	6.45	8.8%	6.45	8.8%	0	0
Park	1.807	1.5%	1.763	2.4%	-0.044	- 0.1%
Buffer	1,525	2.0%	1,525	2.0%	0	0
Church	0.680	0.9%	0.680	0.9%	0	0
Roads	15.642	21.0%	11.628	15.8%	-3.834	-24.8%
TOTAL	73.642 ha	100%	73.642 ha	100%	0	
*Number of units	690**		758**			

**Unit calculations based on 15m x 35m lots.
These lot sizes have been used for comparative purposes only.

TABLE II

RATIO OF CONVENTIONAL LOTS
FOR THE INNOVATIVE SUBDIVISION DESIGN

	NO. OF LOTS	PERCENTAGE
Conventional Lots	474	63.%
Innovtaive Lots	284	37.%
TOTAL	758	100%

The most significant aspects of the innovative subdivision design, as identified by the land use calculations, are the reduction of the percentage of roadway area from 21.0% to 15.8% (24.8% less), the increase in the number of units from 690 to 758 (9.9% more), and the large percentage of conventional lots within the subdivision.

The percentage reductions of land required for roadways and the increase in the number of lots generated are based on the specific examples being investigated. These figures may vary from parcel to parcel based on the parcels size, shape, and the efficiency of the plan.

All the calculations presented in this report were based on one particular sample parcel of land. The actual savings may vary from parcel to parcel. An indication of the application of the concept to a variety of parcels is identified in Appendix 2 of this study. The examples presented include a 42 +/- hectare parcel in northwest Edmonton and a 75 +/- hectare parcel in northwest Calgary. In both examples significant cost savings of comparable magnitude to the report plan were achieved.

SECTION 5

5.0 QUALITATIVE ANALYSIS

5.1 INTRODUCTION

The innovative subdivision design has a number of significant qualitative implications. The design will affect such items as housing affordability, the relationship of the house to the lot, the onsite maintenance requirements, resident privacy, relationship and interaction of residents of adjacent residents, provisions of municipal services, and the perception of the urban form including street scape, and lifestyles. Each of these items are briefly discussed below.

5.2 HOUSING AFFORDABILITY

The greatest benefit derived from the innovative design is the reduction of the final price of the housing unit. As previously illustrated the cost savings achieved amount to a minimum of 12 +/-% of the retail value of the lot. Savings of up to 15% or 20% of the retail value of the lot may ultimately be achieved if other factors previously identified are also taken into consideration.

5.2 HOUSING AFFORDABILITY (Cont'd)

The reduction of the total price of the housing unit will reduce both the down payment requirements and qualifying income for mortgages. This will enable more families to qualify for home ownership.

The implications of the cost reductions are significant to the future homeowner because the savings can apply to zero-lot line and semi-detached units, as well as conventional single family units. The savings apply to both the conventional and innovative lots within the subdivision.

5.3 HOUSE/LOT RELATIONSHIP

The design and relationship of the house on one of the interior lots will be different than the design of a house on a conventional lot. The greatest difference occurs from the elimination of the ornamental front yard. In its place will be a ornamental side yard and a more functional entry for the housing unit on the interior lot. This will permit a re-orientation of the living spaces within the housing unit. The living space

5.3 HOUSE/LOT RELATIONSHIP (Cont'd)

within the house can now focus on the private backyard. The sleeping areas, within the home, will probably be located away from the backyard.

The total useable backyard area for the interior lots will be greater than the backyard for a conventional lot as a result of the 3 metre extra width of the lots.

5.4 ONSITE MAINTENANCE

The onsite maintenance of the interior lots is affected in two ways. The first is the result of the elimination of the ornamental front yard. Although the backyard has been increased in area, the maintenance of the front yard is usually the most time consuming aspect of yard maintenance. The overall effect of this should be a reduction of time required in yard work during the summer period for the interior lots.

Snow removal on driveways for the interior units is the other item affected. The amount of snow removal has been increased. However, if the two adjoining units share the snow removal

5.4 ONSITE MAINTENANCE (Cont'd)

duties, the frequency may be reduced in half. The longer driveways will probably necessitate the purchase of a snow blower by the residents of the interior units.

5.5 RESIDENT PRIVACY

Due to the limited amount of public access, it is anticipated that resident privacy, for the interior lots, will increase. Resident safety should also increase because of the nature of cluster design. Intruders will have to pass four units in order to enter the interior houses.

5.6 RESIDENT INTERACTION

The cluster design of the innovative concept will encourage greater interaction of the residents of the adjacent interior units. This will be encouraged by the shared use of the entry into the interior units, the shared maintenance requirements of the driveways and the orientation of the units outside entrance space.

5.7 MUNICIPAL MAINTENANCE

As a result of the shorter length of residential streets and the increased number of units accessing each street, the requirement for municipal maintenance and services including items such as snow removal, street cleaning, garbage collection, and mail delivery services should be reduced.

5.8 URBAN FORM

The street scape will be altered from a conventional design. A greater separation space will appear between every second unit for the innovative design. This should give the impression, from the street, of more openess and lower densities.

The play activities of children may also be altered by the innovative design. The driveways, adjacent to the houses of the interior units, will provide an excellent opportunity for unstructured play areas for both pre-school children and older children alike. These areas can act as a safe substitute to unstructured activities that presently occur on or adjacent to the public streets.

SECTION 6

6.0 ENGINEERING ANALYSIS

An engineering design for the two subdivisions was undertaken based on the assumptions identified in Section 1, and the Appendix. Table III identifies the resulting on-site servicing costs for each plan. Offsite services have not been included in the construction costs of the subdivision. The offsite costs are assumed to be part of the development agreement costs. Servicing drawings (including typical sections) on which the engineering calculations are based are presented in Figures 7 through 11.

The significant aspect of the innovative design identified during this aspect of the study is the reduction of the land developer's total up front servicing costs by 23.26% and a 30.14% reduction per lot. This reduction is achieved through the reduction of roadway pavement, and decreased requirements for storm, water, and sanitary sewers.

The calculations also identify additional servicing costs for longer service connections and driveways required to service the innovative lots. These costs would probably be incurred during

TABLE III - ONSITE SERVICING COST COMPARISON

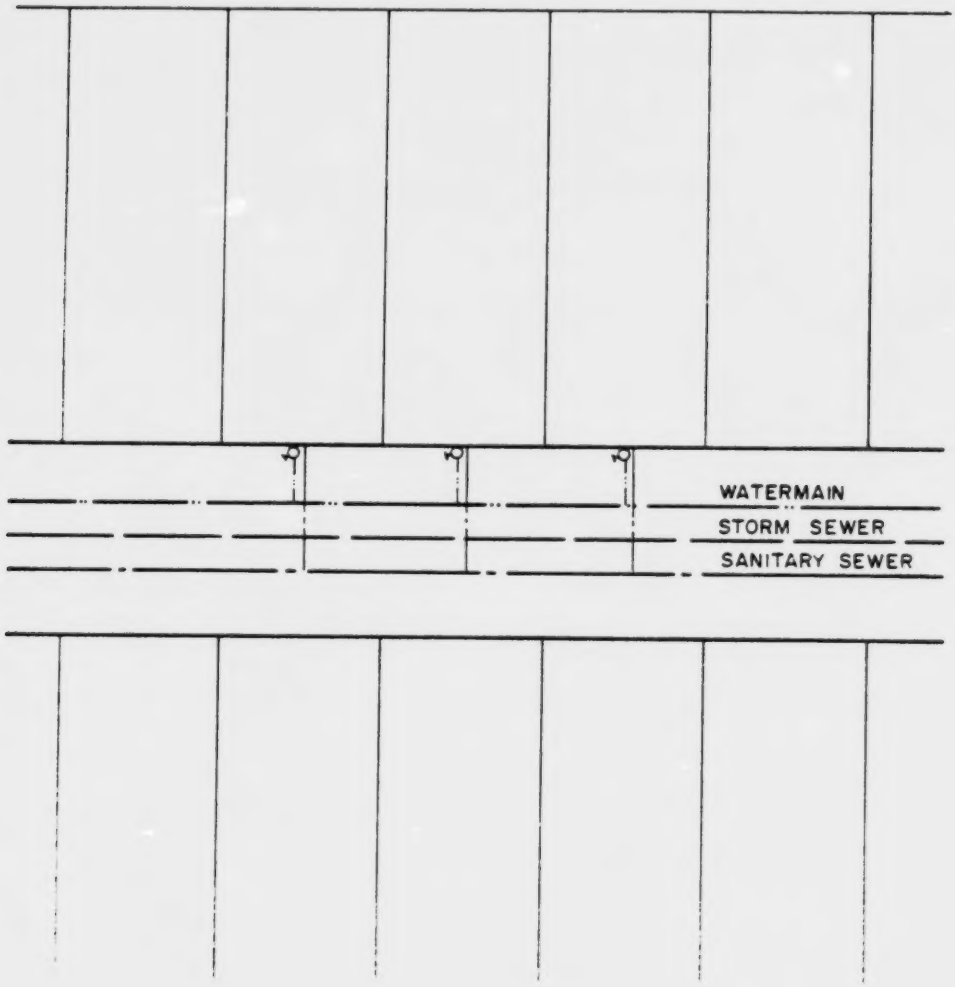
ITEM	CONVENTIONAL PLAN	INNOVATIVE PLAN	DIFFERENCE	PERCENT DIFFERENCE
*Number of Lots	690	758	+ 68.	+ 9.86%
Storm Sewers	$1,010,700.	$ 816,625.	-$ 194,075.	-19.20%
Sanitary Sewers	705,800.	532,000.	- 173,800.	-24.62%
Watermains	1,052,400.	795,740.	- 256,660.	-24.39%
**Services to Property Line	310,500.	341,100.	+ 30,500.	+15.53%
Roads and Sidewalks	3,171,500.	2,311,750.	- 859,750.	-27.11%
Subtotal	6,250,900.	4,797,215.	- 1,453,685.	-23.26%
***Up-front Cost Per Lot to Developer	9,059.	6,329.	- 2,730.	-30.14%
****Extra Service Pipe	NIL	256,000.	+ 256,000.	N/A
****Extra Driveway	NIL	304,400.	+ 304,400.	N/A
TOTALS	$6,250,900.	$5,357,615.	-$ 893,285.	-14.29%
***Total Cost Per Lot	$ 9,059.	$ 7,068.	-$ 1,991.	-21.98%

*The innovative plan has 640 innovative lots and 118 conventional lots.

**Servicing cost of $450. per lot based on dual servicing.

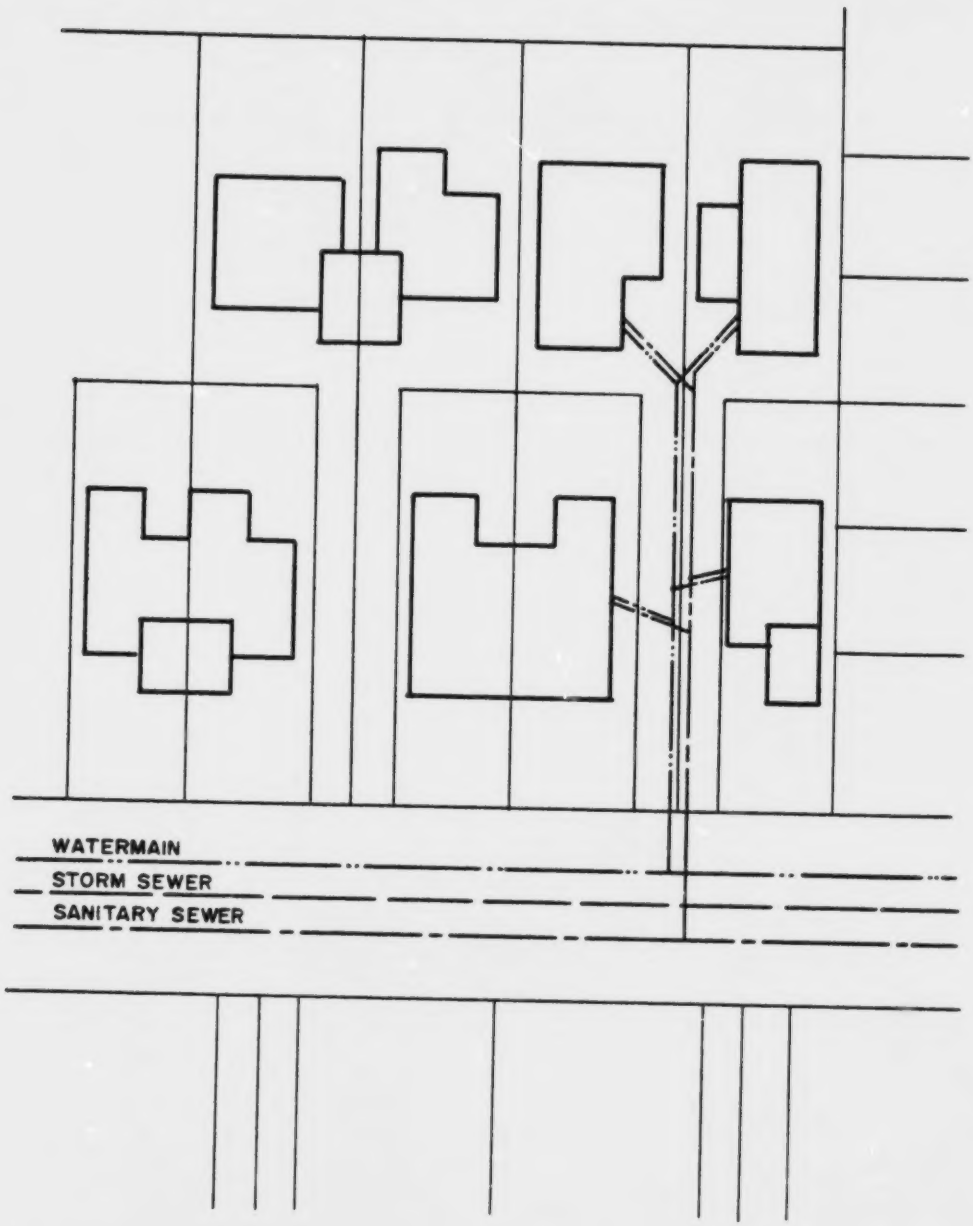
***These costs have been generated for comparative purposes only and are not meant to represent the entire costs of servicing the proposed subdivision. Items such as engineering, planning, surveying, gas service, power service, lot grading, offsite levies, administration and carrying costs have not been calculated.

****These costs represent the additional costs to the homeowners for extra service pipe to the innovative 4 lot modules and the extra shared driveway length.



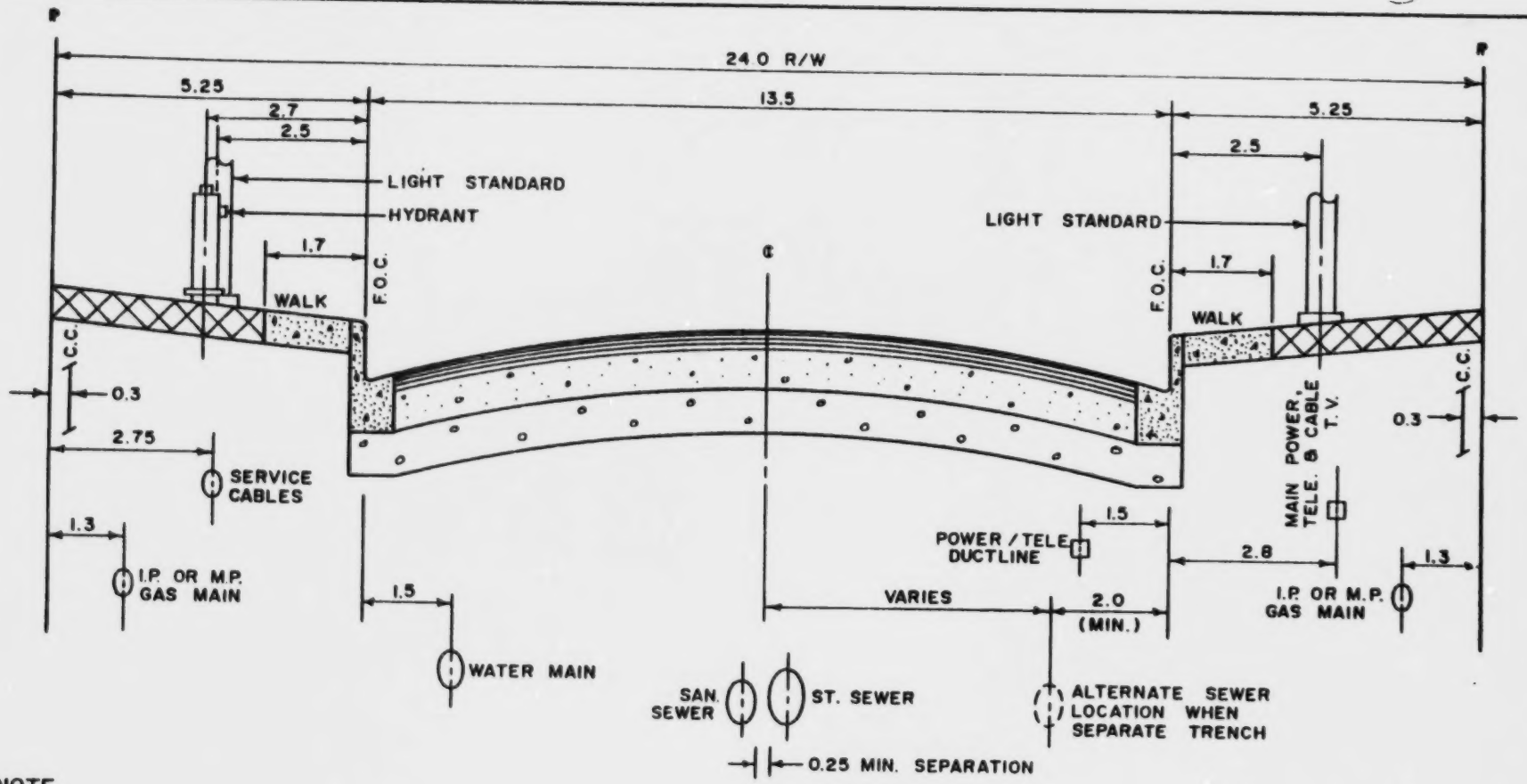
CONVENTIONAL LOT SERVICING

FIGURE 7



REVISED
INNOVATIVE LOT SERVICING

FIGURE 8



NOTE

1.) WATER ALWAYS ON OPPOSITE SIDE TO POWER MAIN.
2.) PIPE SIZES AND DEPTH VARY.
3.) LANDSCAPING MUST NOT COVER POLE BASES.

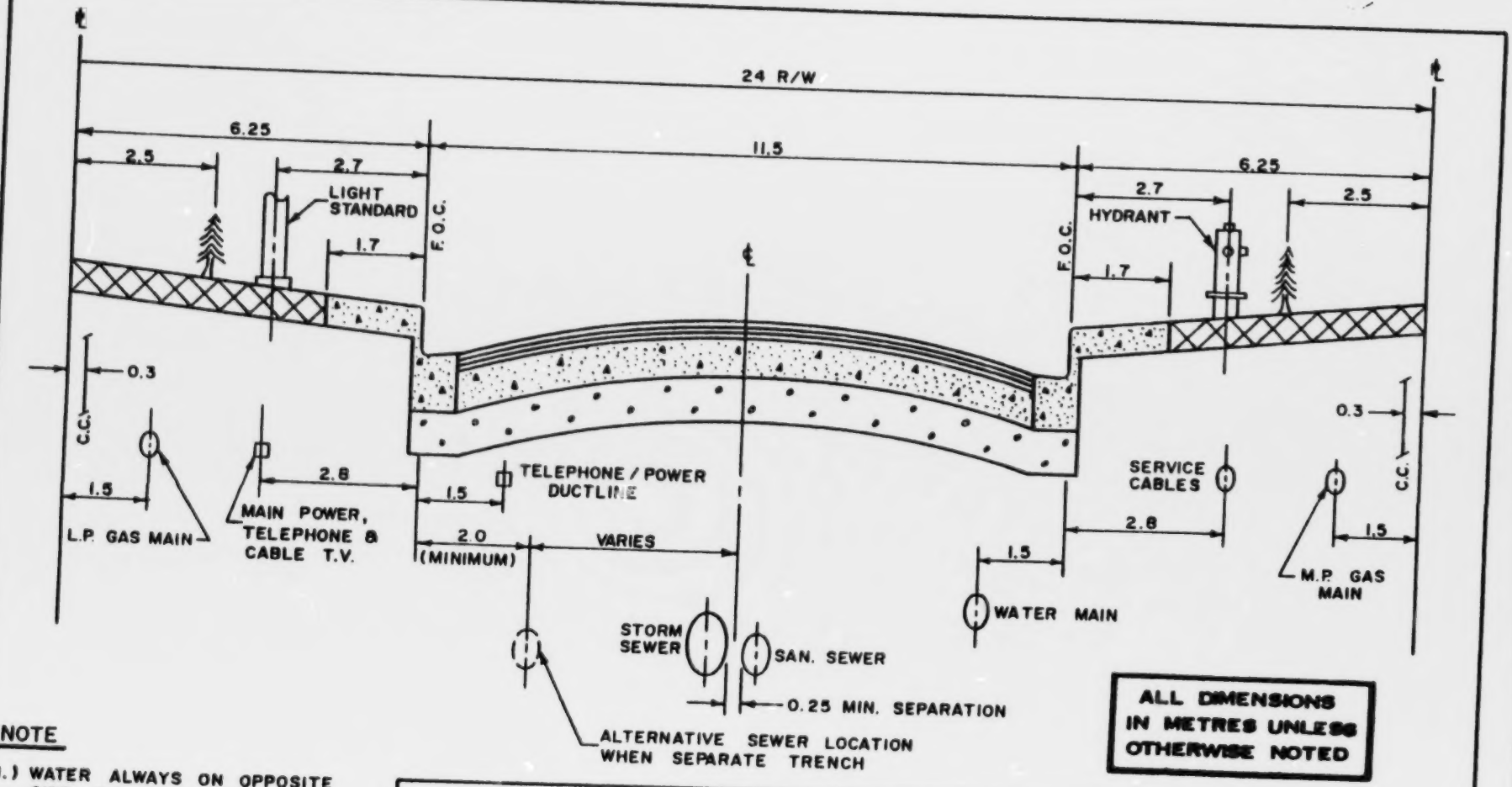
ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED

The City of Edmonton — Engineering Department

Revisions

UTILITIES LOCATION PLAN
13.5m COLLECTOR (CURBLINE WALK)

Date	Drawn By		Drawing
DEC. 15, 77	K. ARYCHUK		9
Scale HOR. 1:100 VERT. 1:20	Checked By.	City Engineer	



ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED

NOTE

1.) WATER ALWAYS ON OPPOSITE SIDE TO MAIN POWER.

2.) PIPE SIZES AND DEPTHS VARY.

3.) HYDRANTS TO BE LOCATED ONLY WHERE THERE IS NO SERVICE POWER.

4.) LANDSCAPING MUST NOT COVER POLE BASES.

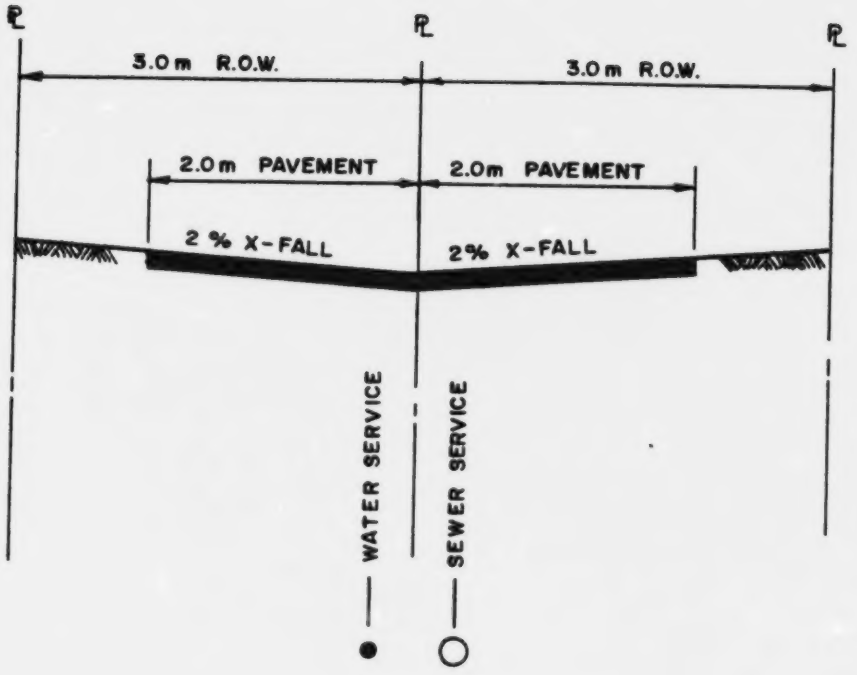
The City of Edmonton

Engineering Department

Revisions

UTILITIES LOCATION PLAN
11.5m RESIDENTIAL (curbline walk)

Date	Drawn By.		Drawing
NOV. 28, 1977	K. ARYCHUK	George Hodge, City Engineer	10
Scale HOR. 1:100 VERT. 1:20	Checked By.		



REVISED
INNOVATIVE LOT DRIVEWAYS

FIGURE 11

the house construction stage and reduce the total servicing savings to 14.29% of the cost of the conventional subdivision. However, with the increased lot yield, a 21.98% cost savings per lot for the innovative design over the conventional design is achieved.

Table III identifies the servicing cost per lot and difference for each of the concepts. The savings resulting from the implementation of the innovative design will vary from site to site based on the shape, size and designer.

SECTION 7

7.0 COST COMPARISON

The calculation used to determine the minimum cost difference per lot between the conventional subdivision design and the innovative design is identified in Table IV. This amount may vary from plan to plan based on the parcels size, shape, and the designer. The savings of $4,540 for a $37,500 conventional lot does not represent the total savings that may be achieved as a result of the innovative design. Additional savings (per lot), may occur if carrying charges, contingency allowances, profit, sundries, etc., are adjusted accordingly.

Through discussions with land developers a sample of the total development costs for a typical 40.5 hectare (100 acre) site within the Edmonton area was obtained. These costs are identified on a % basis in Table V. This Table has been presented solely for the purpose of identifying the other factors affected by the cost savings. The identification of the total potential savings to the future resident is difficult to determine and will vary for each development.

TABLE IV

MINIMUM ECONOMIC BENEFITS

A. Land Development	
1. Value of lots for conventional subdivision	
690 lots x $37,500./lot	$25,875,000.
2. Less up-front servicing cost savings to Developer	-$ 1,453,685.
TOTAL	$24,421,315.
3. Value of lots for innovative design	
$24,421,315. ÷ 758 units	$ 32,220.+/-
4. Cost savings/lot to developer To maintain similar profit level.	$ 5,280.+/-
B. Final Savings Per Lot	
5. Up-front savings per lot	$ 5,280.
6. Additional cost for extra services and driveways (560,400. ÷ 758)	$ 740.
TOTAL	$4,540./unit

TABLE V

TYPICAL DEVELOPMENT COSTS

	%	AFFECTED BY INNOVATIVE DESIGN
Mortgage Interest	7.0%	No
Municipal Tax	1.2%	No
Servicing Costs	51.5%	Yes
Stripping and Grading	6.6%	No
Engineering	8.7%	Yes
Performance Bonds	0.1%	Yes
Sundry Costs	5.9%	Yes
Surveying	1.9%	No
Development Agreement	3.7%	No
Power and Gas	4.8%	Yes
Planning	0.4%	No
Contingency	3.2%	Yes
Interest on All Costs	15.8%	Yes
Legal Fees ($100./lot)	0.8%	Yes
Sundry Recoverable	(11.6%)	No
TOTAL	100%	

SECTION 8

8.0 CONCEPT APPROVALS

The final step in the evaluation of the innovative design concept entailed a review of the concept with the approval athorities within the Edmonton area. Four separate approval authorities were contacted for comments. These included the City of Edmonton, the Edmonton Metropolitan Regional Planning Commission, the Yellowhead Regional Planning Commission, and Alberta Municipal Affairs. A summary of their comments is presented below.

8.1 MUNICIPAL AFFAIRS

Three aspects of plan approvals were discussed with respect to the approval of the innovative subdivision design concept. These included the current legislation governing subdivision approval, the design and planning aspects of the concept, and the political acceptance of the concept.

In terms of the legislation, it was generally agreed that current legislation would not hinder approvals. A new district would be prepared for any municipality that was prepared to adopt the concept.

8.1 MUNICIPAL AFFAIRS (Cont'd)

In terms of the design and planning considerations, Municipal Affairs was enthusiastic about the innovative design as an alternative solution to what is presently available. Any problems that they could forsee from a planning point of view were minor in nature and will be worked out when an actual subdivision application is received.

The political aspects are the biggest obstacle to approvals of the concept. Most of the municipalities Municipal Affairs has jurisdiction over are rural in nature. They tend to be very conservative in their approach to land development. As a result, a project would probably have to be first built in a larger urban centre, such as Edmonton.

Generally speaking, Municipal Affairs was receptive to the innovative design concept. They welcome new ideas that will assist in the reduction of the cost of housing.

8.2 YELLOWHEAD REGIONAL PLANNING COMMISSION

The discussions with the Yellowhead Regional Planning Commission were very similar to those with Municipal Affairs. From a

8.2 YELLOWHEAD REGIONAL PLANNING COMMISSION (Cont'd)

planning point of view the concept was acceptable. Legislation would not pose any difficulties. Once again, the political aspect of acceptance by the local municipalities, will be the determining factor. The acceptance by the local governments would probably occur subsequent to the construction of an initial project.

8.3 EDMONTON METROPOLITAN REGIONAL PLANNING COMMISSION

As with the other two approval authorities, Edmonton Metropolitan Regional Planning Commission was receptive to the concept. They would assist with approvals once a municipality indicated acceptance of the concept.

8.4 CITY OF EDMONTON

Approval of the design concept was investigated more extensively with the City of Edmonton than the other three jurisdictions. All of the main agencies within the approval process affected by the concept were directly contacted. A list of subdivision circulation and the specific agencies contacted are identified in

8.4 CITY OF EDMONTON (Cont'd)

Table VI. The concept is presently being informally processed through the entire circulation for comments. These should be available by the middle of July.

The City of Edmonton is very receptive to innovative ideas that will assist in the reduction of the price of serviced lots. The initial concept would be approved under the D.C., Direct Control District of the Edmonton Land Use By-law. Future projects would be approved under a new district.

All of the various agencies contacted were very cooperative, and in fact some, such as the Engineering Department suggested additional cost saving measures. These are discussed along with their implications in the next section of this report.

8.5 SUMMARY

Actual copies of the discussions held with the approval agencies are included in Appendix 3. Some of the comments from the circulation of the concept are presented in Appendix 4.

TABLE VI

CIRCULATION LIST FOR CITY OF EDMONTON
PLAN APPROVALS

Agency	Contacted for Comments
Edmonton Power	No
Edmonton Telephones	No
Engineering - Water and Sanitation	Yes
Transportation Systems Department	Yes
Land Development Coordination	No
Real Estate and Housing Department	Yes
Edmonton Parks and Recreation	No
Northwestern Utilities	Yes
Fire Department	Yes
Assessment	Yes
Names Advisory Committee	No
General Research Services	No
General Plan Project	No
Corporate Policy Planning	No
Executive Services	No
Finance	No
Law	No
Police	Yes
Library	No
Edmonton Separate School Board	No
Edmonton Public School Board	No
Health Department	No
Industrial Development - C.P.R.	No
Industrial Development - C.N.R.	No
Business Development Department	No
Alberta Environment	No
Restricted Land Use Branch, Alberta Environment	No
Alberta Transportation	No
Archeological Survey Branch, Alberta Culture	No
By-law Enforcement	No
Technical Services Section	No
Edmonton Metropolitan Regional Planning Commission	Yes
Alberta Inter-Church Planning Association	No

8.5 **SUMMARY** (Cont'd)

The only concerns identified from the discussions with the four approval authorities included the political acceptability of the concept by the rural municipalities at the outset, and the requirement for further discussions with the fire department upon submission of an actual design.

In summary, all the approval authorities were receptive towards the concept as a solution to reducing the cost of housing, and it was generally expressed that plan approvals would not pose a serious problem to the development of the concept.

SECTION 9

9.0 CALGARY INNOVATIVE DESIGN COMPETITION

The innovative subdivision design concept was submitted as an entry in the Calgary Innovative Design Competition. A design was prepared for a 75 +/- hectare parcel in Edgemont in northwest Calgary. As identified previously, copies of the submission drawings are presented in Appendix 4.

Of 54 submissions from across Canada, the design was awarded a prize of merit for the greatest reduction in the price of a serviced lot by means other than engineering.

SECTION 10

10.0 SUMMARY

The innovative subdivision design reduces the amount of land required for road right-of-ways by approximately 25% to 30% over a conventional design. In addition, based on the plans prepared for this study, the total lot yield increases by approximately 10% over the conventional subdivision design. These percentages will vary from parcel to parcel based on such factors as parcel size, shape, and the designer.

The minimum cost savings identified as a result of the innovative design presented within this report is $4,540. This savings is the reduction per lot based on a retail value of $37,500. for a conventional lot within a conventional subdivision design and it would apply to all lots within the innovative design. Additional savings may occur if other development costs are adjusted accordingly.

The approval of the innovative design concept basically consists of three distinct stages of approval and/or acceptance. The initial phase is the existing legislation. The concept will be

approved initially under a direct control (D.C.) district. Eventually, a new district would be prepared to accommodate the concept.

The second aspect of the approval process is the acceptability by the approval authorities on the basis of planning principles. All the authorities approached agreed that this would not pose any problem.

The third aspect is that of politics. The acceptability of the concept at the political level for the rural municipalities will probably occur subsequent to the construction of a sample project in a larger metropolitan area. This is due to the conservative nature of the rural municipalities.

Generally, there are no major hinderances to the approval of the concept. An initial demonstration project will probably be built in Edmonton or Calgary. Once the concept becomes popular the possibility for use in other municipalities is good.

The qualitative merits of the concept consist of trade offs. The interior units provide a reduction in the retail value for all lots within the plan, increased privacy of the interior units, and

altered lifestyle versus loss of direct access to a public road and the maintenance of the long driveway. The trade-offs will have to be evaluated by each potential purchaser.

In conclusion, the innovative design displays a potential for significant cost reductions in the price of a serviced residential lot. It appears approvals will not hinder the development of the concept. The next step should be the evaluation of market acceptability of the concept.

APPENDIX 1

ENGINEERING ASSUMPTIONS

APPENDIX

a) Storm Sewers

- sizing based on minimum flow velocity of 0.60 m/s. (Manning's n = 0.013)
- design flow formula Q = 2.78 CIA

  Q = flow, l/s.

  C = runoff coefficient = 0.3

  I = rainfall intensity, mm/h, five year return period

  A = catchment area (hectares)
- minimum sewer diameter of 250 mm
- maximum surface flow distance before interception of 120m
- all lots drain forward to street
- no swales permitted at roadway intersections
- increase minimum grades by 50% for curved sewers.

b) Sanitary Sewer

- sizing based on minimum flow velocity of 0.6 m/s (Manning's n = 0.13)
- average per capita flow = 350 lpcpd (litres per capita per day)

b) Sanitary Sewer (Cont'd)

- design flow calculation:

  Q design = Q average x R

  where $R = 5/P^{0.2}$ P = population in thousands,

  and $2.5 <= R <= 4.0$

  minimum sewer diameter of 200mm

- maximum manhole spacing of 120m

- increase minimum grade by 50% for curved sewers

c) Watermains

- minimum main size of 150mm

- maximum untied runs:

  150 mm - 200 m

  200 mm - 550 m

  250 mm - 750 m

- maximum hydrant spacing of 150 m in SFD areas, 90m in multi, school, and commercial areas

- hydrants installed at intersecting street and tied to looped main for cul-de-sacs

- if more than one hydrant exists on a main between interconnection, minimum pipe diameter is 200 mm.

c) Watermains (Cont'd)

- valving spaced such that:
  - no more than 2 hydrants taken out of service by a shut down
  - no more than 4 valves required to isolate a segment of main
  - no more than approximately 20 single family lots affected by a shut down.
- Hazen Williams C=140
- Per capita consumption
  - high day demand 725 L/d (litres per day)
  - peak hour demand 1,100 L/d
- minimum residual pressure of 280 kPa at ground level based on peak hour demand analysis
- fire flow of 18,000 L/minimum with residual at ground pressue of 40 kPa

d) Services

- no storm sewer services to individual homes
- separate water and sanitary services in common trench in sets of two i.e. one trench per 2 lots containing two water services and two sewer services
- depth of sewer mains adjusted for sanitary sewer service runs to back lots for innovative concept.
- separate water and sanitary services to each backlot in sets of two per trench

e) Roads

- Collector

  14 m right-of-way

  13.5 m pavement width

  1.7 monolithic sidewalk both sides

- Local

  18 m right-of-way

  11.5m pavement width

  1.7m monolithic sidewalk one side

- Driveways

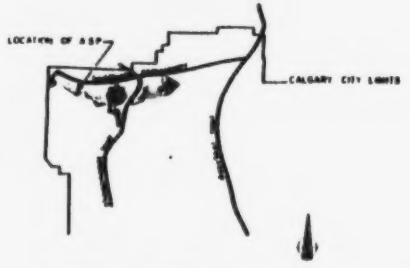
  6 m right-of-way

  4 m pavement width

  pavement to near properly line of back lots

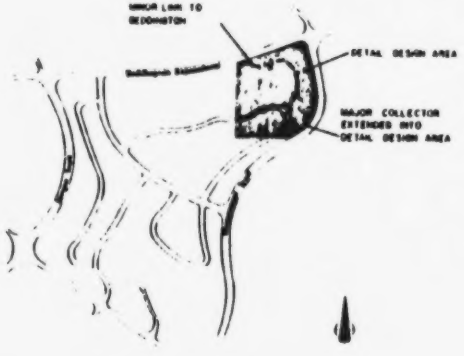
APPENDIX 2

ADDITIONAL CONCEPT APPLICATIONS INCLUDING CALGARY INNOVATIVE DESIGN COMPETITION DRAWINGS



● LOCATION OF STUDY AREA

Not To Scale



REVISED A.S.P. CONCEPT

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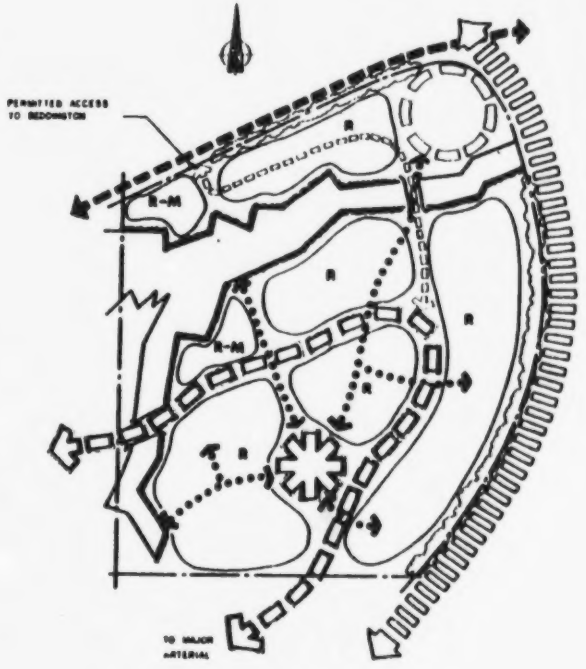


DEVELOPMENT CONCEPT

Not To Scale

LEGEND

- EXPRESSWAY
- ARTERIAL
- COLLECTOR
- MINOR LINK
- STORMWATER LAKE
- BUFFER
- ELEMENTARY SCHOOL
- RAVINE SETBACK
- RAVINE CROSSING
- R — SINGLE FAMILY DWELLINGS
- R-M — MULTI-FAMILY DWELLINGS
- PEDESTRIAN LINK
- RAVINE (E.R.)
- PROPERTY LINE

CALGARY INNOVATIVE DESIGN COMPETITION

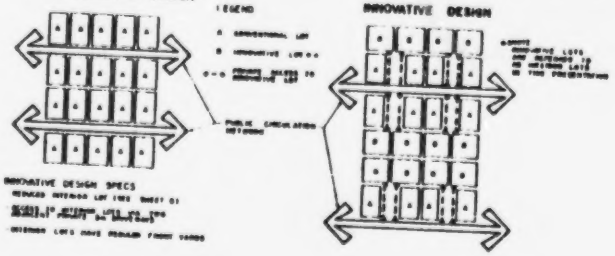
SUBMISSION NO: 16134

DATE: APRIL, 1982

Drawing 1 of 6

INNOVATIVE SUBDIVISION DESIGN CONCEPT

CONVENTIONAL DESIGN



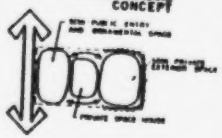
INNOVATIVE DESIGN

INNOVATIVE DESIGN SPECS

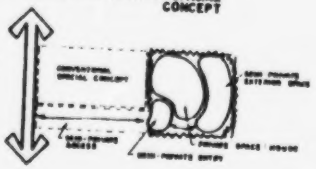
- REDUCED INTERIOR LOT SIZE (SEE SHEET 6)
- [illegible]
- INTERIOR LOTS HAVE REDUCED FRONT YARDS

SPACIAL RELATIONSHIPS

CONVENTIONAL SPACIAL CONCEPT



INNOVATIVE DESIGN - SPACIAL CONCEPT



GENERAL CONCEPT FEATURES

- DEVELOPMENT COST SAVINGS (SEE ECONOMIC BENEFITS-THIS SHEET)
- REDUCTION OF LAND DEDICATED FOR ROAD ROW
- INCREASE IN PERCENTAGE OF LAND SOLD
- REDUCTION OF MAINTENANCE AND OPERATION COSTS FOR
  - STREET MAINTENANCE
  - SNOW REMOVAL
  - GARBAGE COLLECTION
  - MAIL DELIVERY
- POTENTIAL COST SAVING FOR INTERIOR UNIT CONSTRUCTION
- INCREASED PRIVACY FOR INTERIOR LOTS
- CONCEPT FLEXIBILITY FOR APPLICATION TO DETACHED AND SEMI DETACHED HOUSING FORMS
- PROVISION OF A LARGE PERCENTAGE OF CONVENTIONAL LOTS AT REDUCED COST
- ALL LOT SERVICES ARE BASED ON CONVENTIONAL CONSTRUCTION STANDARDS

SPECIAL FEATURES CALGARY PLAN

- REDUCTION OF ROAD ROW TO 11.9% OF DEVELOPABLE AREA
- NO ACCESS TO INTERIOR LOTS FROM COLLECTOR ROADWAY
- INTERIOR LOTS ONLY ON UP SLOPE SIDE OF ROADS (EXCEPT ADJACENT TO PARKS) TO MINIMIZE VEHICLES BEING STUCK AT BOTTOM OF DRIVEWAYS UNDER ICY CONDITIONS
- FULL UTILIZATION OF CONCEPT HAS BEEN LIMITED DUE TO SITE CONSTRAINTS
- LOT GENERATION, BASED ON LAND USE IDENTIFIED ON SHEET 5, IS

CONVENTIONAL LOTS	190	24.0%
INTERIOR LOTS	498	39.7%
MULTIPLE UNITS	121	15.5%
TOTAL	785	100%

CALGARY APPROVALS

- INITIAL PROJECT COULD PROCEED IN CALGARY UNDER THE DC LAND USE DISTRICT
- FUTURE DEVELOPMENT APPROVALS SHOULD OCCUR ON THE BASIS OF A NEW DISTRICT DESIGNATION WITHIN THE LAND USE BY LAW

CONFORMANCE TO LAND USE BY-LAW

- THIS CONCEPT QUALIFIES UNDER ALL PROVISIONS OF THE CALGARY LAND USE BY-LAW EXCEPT FOR THE DEFINITION OF LOT WIDTH. THE NON-CONFORMANCE RESULTS FROM THE REFERENCE TO STREET FRONTAGE IN THE DEFINITION

FIRE PROTECTION

- ADEQUATE ACCESS TO THE INTERIOR LOTS, FOR FIRE PROTECTION, IS ENSURED THROUGH THE PROVISION OF TWO ADJACENT PRIVATE DRIVEWAYS WHICH PROVIDE A MINIMUM OF A 6m UNOBSTRUCTED CORRIDOR TO THE INTERIOR LOTS

COST BENEFITS

- VALUE OF LOTS FOR A CONVENTIONAL SUBDIVISION DESIGN (SHEET 6) BASED ON $55,000/LOT * $33,550,000
- LESS SERVICING COST SAVINGS OF INNOVATIVE DESIGN (SHEET 6) - $1,000
- EQUALS $32,829,000
- MARKET VALUE OF LOTS FOR INNOVATIVE DESIGN ASSUMING SAME PROFIT) $32,829,000 - 666 * $49,140/LOT
- MINIMUM POTENTIAL SAVINGS TO HOME OWNER $55,000 - 49,140 * $5,860/LOT

* NOTE

ADDITIONAL SAVINGS, PER LOT, MAY OCCUR IF CARRYING CHARGES, DUE TO REDUCED CONSTRUCTION COSTS, AND OTHER FACTORS SUCH AS CONTINGENCY ALLOWANCES, PROFIT PERCENTAGE, ETC ARE ACCORDINGLY ADJUSTED

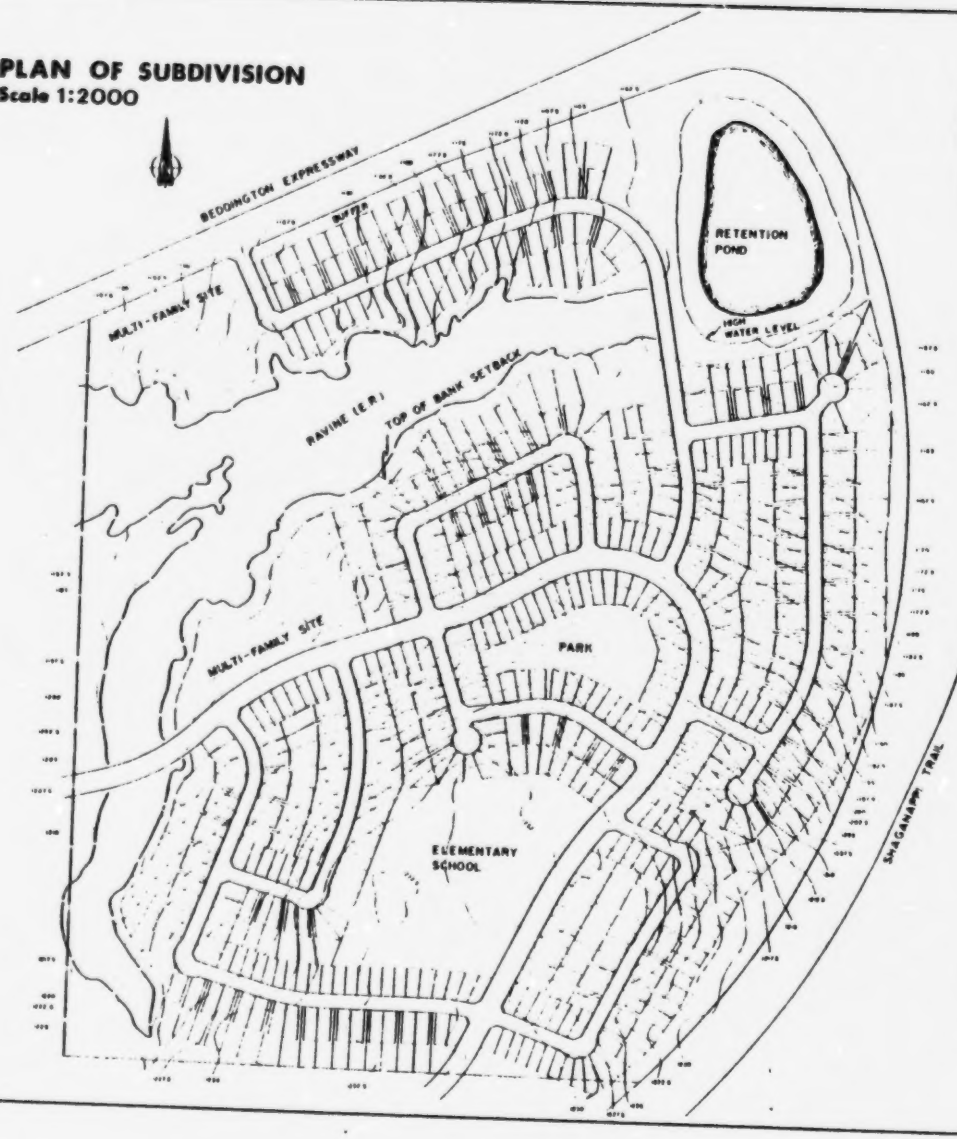
CALGARY INNOVATIVE DESIGN COMPETITION

SUBMISSION NO: 16134

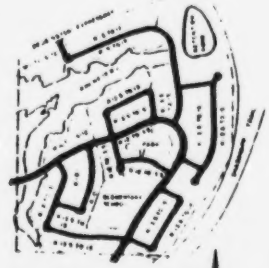
DATE: APRIL, 1982

Drawing 2 of 6

PLAN OF SUBDIVISION
Scale 1:2000



NOTE - CUT & FILL AREAS ARE NOT IDENTIFIED FOR THE PURPOSE OF CLARITY. THESE AREAS ARE TO BE CUT & FILLED TO ACCOMODATE THE MAXIMUM SLOPES FOR ROADWAYS



LAND USE MAP
N.T.S.

- R33 1013 DENOTES LOT FRONTAGE

LAND USE TABLE

DEVELOPABLE LAND	ha	# units	%
SINGLE FAMILY DETACHED	33.40	664	44.5
MULTI-FAMILY SITES	3.49	121	4.6
PARK (M.R.)	1.18	—	1.6
ROADS	8.91	—	11.9
SCHOOL SITE	3.78	—	5.0
sub total	50.7 ha		67.6 %

UNDEVELOPABLE LAND			
RAVINE (E.R.)	9.14		12.2
RETENTION POND	3.57		4.7
(1)BUFFERS / SETBACKS	11.60		15.5
sub total	24.3 ha		32.4 %

TOTAL STUDY AREA 75.0 ha

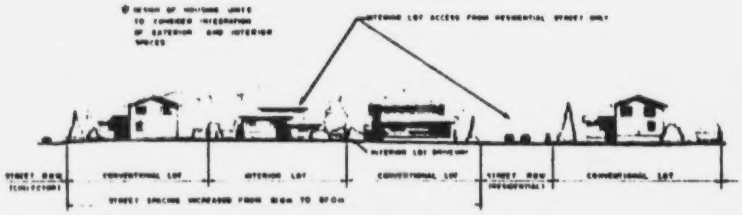
(1)NOTE Portions of this area can be developed as part of other developments.

CALGARY INNOVATIVE DESIGN COMPETITION

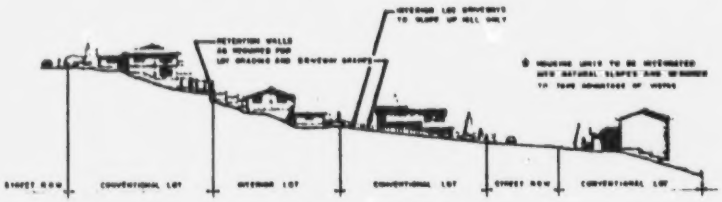
SUBMISSION NO: 16134

DATE: APRIL, 1982

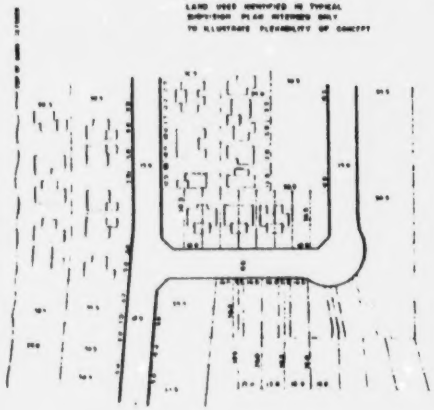
Drawing 3 of 6



TYPICAL SECTION – LEVEL LOTS
Scale 1:400



TYPICAL SECTION – SLOPING LOTS
Scale 1:400



TYPICAL SUBDIVISION PLAN
Scale 1:400

LEGEND

PROPERTY LINE

HOUSING UNIT

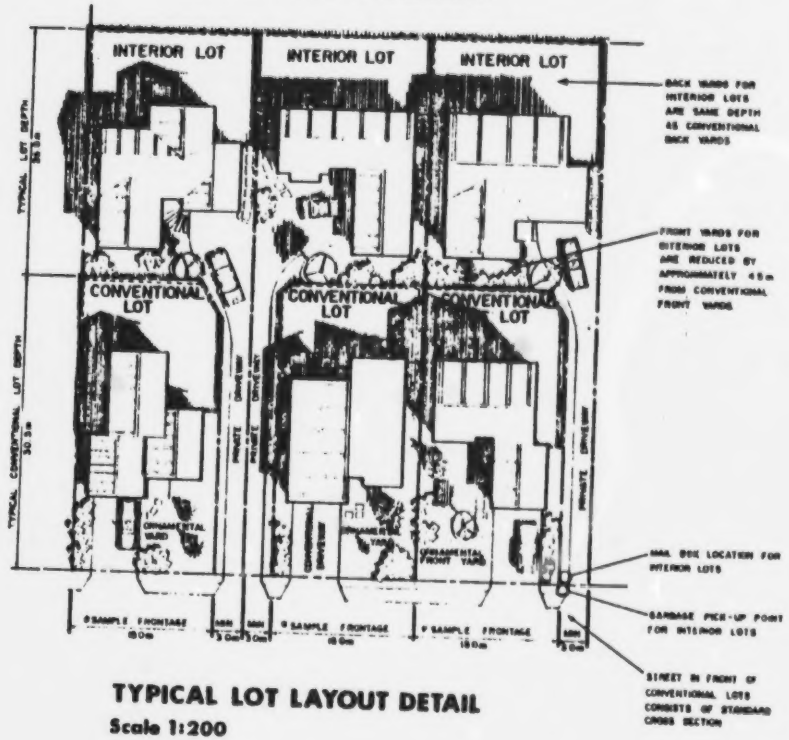
CALGARY INNOVATIVE DESIGN COMPETITION

SUBMISSION NO: 16134

DATE: APRIL, 1982

Drawing 4 of 6

TYPICAL STREET ELEVATION


INTERIOR LOT
INTERIOR LOT
INTERIOR LOT
CONVENTIONAL LOT
CONVENTIONAL LOT
CONVENTIONAL LOT
PRIVATE DRIVEWAY
PRIVATE DRIVEWAY
PRIVATE DRIVEWAY
ORNAMENTAL YARD
ORNAMENTAL FRONT YARD
TYPICAL LOT DEPTH 36.5m
TYPICAL CONVENTIONAL LOT DEPTH 30.5m
9 SAMPLE FRONTAGE 9.0m
9 SAMPLE FRONTAGE 18.0m
9 SAMPLE FRONTAGE 18.0m
BACK YARDS FOR INTERIOR LOTS ARE SAME DEPTH AS CONVENTIONAL BACK YARDS
FRONT YARDS FOR INTERIOR LOTS ARE REDUCED BY APPROXIMATELY 4.5m FROM CONVENTIONAL FRONT YARDS
MAIL BOX LOCATION FOR INTERIOR LOTS
GARBAGE PICK-UP POINT FOR INTERIOR LOTS
STREET IN FRONT OF CONVENTIONAL LOTS CONSISTS OF STANDARD CROSS SECTION

TYPICAL LOT LAYOUT DETAIL

Scale 1:200

● NOTE:

CONCEPT IS FLEXIBLE AND CAN BE USED FOR ALL DETACHED AND SEMI-DETACHED HOUSING. SAMPLE FRONTAGE PRESENTED IN TYPICAL LOT LAYOUT DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY.

TYPICAL LOT SPECIFICATIONS FOR SAMPLE LOT DETAIL

	Interior Lot	Conventional Lot
FRONT YARD	3.0m	7.5m
SIDE YARD	1.5m	1.5m
REAR YARD	7.5m	7.5m
LOT WIDTH	9.0m	18.0m
LOT DEPTH	30.5m	30.5m
STREET ACCESS	9.0m	n/a
LOT AREA	270 m²	549 m²

DEVELOPMENT CONTROLS:

DEVELOPMENT CONTROLS WILL BE REQUIRED TO ENSURE

- DEVELOPMENT UNITY
- PROPER INTEGRATION OF HOUSING UNIT AND LOT
- ADEQUATE USE OF YARDS
- IDENTIFY PROPER LOT GRADING AND BASEMENT ELEVATIONS

LEGEND

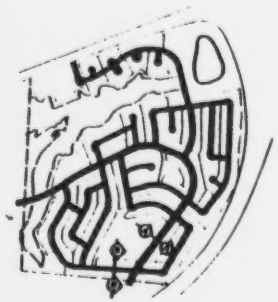
- LOT LINES
- FENCE
- SHRUBS
- CONIFEROUS TREE
- DECIDUOUS TREE

CALGARY INNOVATIVE DESIGN COMPETITION

SUBMISSION NO: 16134

DATE: APRIL, 1982

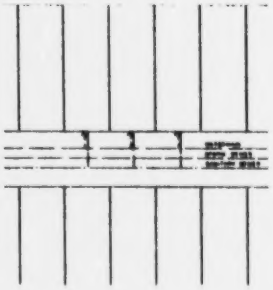
Drawing 5 of 6



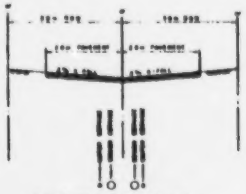
CONVENTIONAL PLAN

SECTION A-A
COLLECTOR R.O.W.

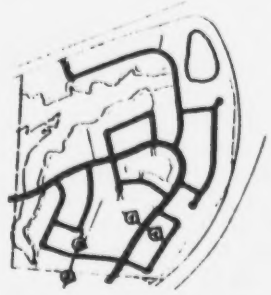
SECTION B-B
RESIDENTIAL R.O.W.



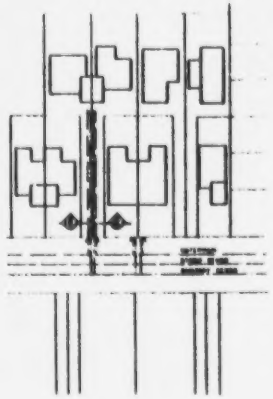
CONVENTIONAL LOT SERVICING



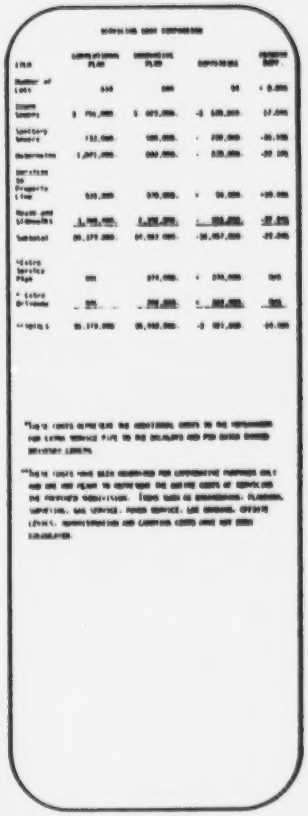
SECTION C-C
INTERIOR LOT DRIVEWAYS



INNOVATIVE PLAN



INNOVATIVE LOT SERVICING

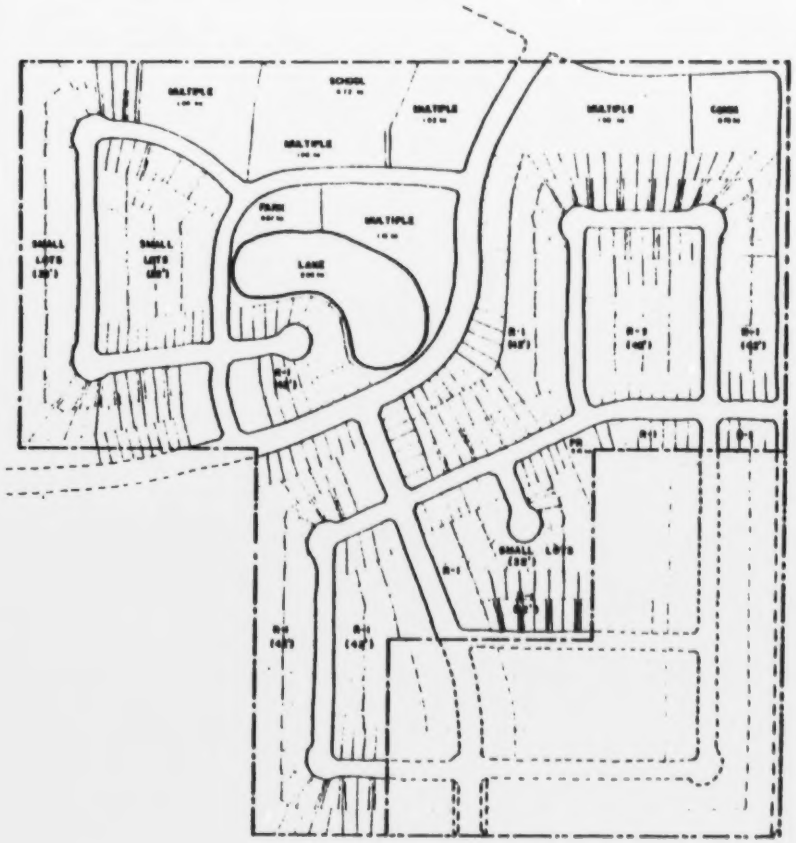


CALGARY
INNOVATIVE DESIGN
COMPETITION

SUBMISSION NO: 16134

DATE: APRIL, 1982

Drawing 6 of 6



PLAN
1:2000

LAND USE:

	AREA (hectares)	NO OF UNITS	% (by land)
SINGLE FAMILY (R-1) (40')	18.96	359	40.39 %
SMALL LOTS (32')	7.90	196	16.99 %
MULTIPLE FAMILY	9.97	248	21.06 %
PARK	1.34	—	2.86 %
ROAD	5.82	—	12.42 %
COMMERCIAL	0.79	—	1.70 %
LANE	2.04	—	4.35 %
TOTAL	46.84 ha.	803 ± UNITS	100.00 %

HOUSING MIX:

	NO OF UNITS	%
CONVENTIONAL LOTS	359	44.70 %
INTERIOR LOTS	196	24.38 %
MULTIPLE UNITS	248	30.84 %
TOTAL	803	100 %

COST BENEFITS:

VALUE OF LOTS FOR CONVENTIONAL SUBDIVISION DESIGN
ASSUMING $32,000/LOT (AVERAGE) @ 407 LOTS = $13,304,000

LESS SERVICING COST SAVINGS FOR INNOVATIVE DESIGN
ASSUME 60% OF $2,000,000+ ON-SITE SERVICES FOR CONVENTIONAL DESIGN
= 1,233,000 x 10.3% (SERVICING COST SAVINGS) = $84,000 10,773,000

MARKET VALUE OF INNOVATIVE DESIGN LOTS
10,773,000 ÷ 327 LOTS = $26,520
EXTRA COST TO SERVICE BACK LOTS = $900/UNIT

MINIMUM POTENTIAL SAVINGS PER UNIT – TO THE DEVELOPER $5000 (17.3%)
– TO HOME OWNER $3000 (10.0%)

FIGURE - A

FIGURE - 8

APPENDIX 3

MINUTES OF MEETINGS WITH APPROVAL AUTHORITIES

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: May 3rd, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Brian Pedigren - Alberta Municipal Affairs
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss innovative design and plan approvals by Alberta Municipal Affairs.

- No major objections to the concept. However, it was felt that prior to a smaller municipality accepting the concept one would have to be built in Edmonton.

- Alberta Municipal Affairs encourages new ideas.

- There is no legislation that would deter the approval of the concept, if the design were accepted by a municipality, a new district would be established.

- Any minor technical problems could be worked out during the submission of an actual plan.

.../2

CONCLUSIONS:

Municipalities falling within the jurisdiction or Alberta Municipal Affairs are generally conservative in nature, and would probably not accept the design without seeing other examples.

Approvals will not pose any problems once a municipality accepts the concept.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: June 25th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design

ATTENDANCE:

Tim Whitehead - Yellowhead Regional Planning Commission
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

Discuss the approval of the concept.

- Generally the municipalities within the Yellowhead Regional Planning Commission are rural in nature and relative conservative in their approach to development. This will be the greatest obstacle to the approval of the concept.

- Once the concept has been accepted by a municipality a new district will be established and the concept could proceed.

CONCLUSIONS:

The Yellowhead Regional Planning Commission will assist in the approvals once an actual submission occurs.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: June 24th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Doug McDonald - Edmonton Metropolitan Regional Planning Commission

Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss approvals for the innovative concept.

- Doug could not see any problems with the current legislation. A new district would be established once a municipality was interested in the concept.

- He was very receptive to the concept from a planning point of view and considered it an excellent alternative to zero-lot line.

CONCLUSIONS:

Once a municipality accepts the concept, Metropolitan Regional Planning Commission will assist in the approvals.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: April 29th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

J. Sterling - City of Edmonton - Planning Department
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss potential problems with planning approvals of innovative design concept in Edmonton.

- Only problem Jack identified for approvals was the present definition of "Lot Width" under the present Land Use By-law. However, this could be changed.

- Initially, the first project would be approved under the D.C. District and if the concept becomes popular, a new district would be established for future projects. He felt that a new district would be more suitable than trying to revise present districts.

- Generally the City of Edmonton is encouraging innovative ideas.

.../2

CONCLUSIONS:

The City of Edmonton, Planning Department wants to see innovative ideas. All new ideas will encounter some difficulties. However, the City will assist with approvals, if the ideas merit assistance.

Jack Sterling was very receptive to the design concept.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED:

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Larry Benowski - City of Edmonton, Plan Approvals
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss circulation of concept through City approval process for comments.

- Tritek provided Larry with a copy of the concept and the phase one report.

- He will circulate the concept and expects comments back by the end of June to mid July.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: May 25th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Sigi Gudavicius - City of Edmonton, Engineering
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss Engineering approvals for concept in Edmonton.

- He liked the innovative concept and indicated the Engineering Department is interested in innovative ideas that will reduce the prices of lots.

- He suggested that the cluster of four units be serviced by one 8" sanitary service connection with all four units tieing into this. This will save on trenching, and reduce the number of tie-ins to the main within the road right-of-way. Water will probably parallel the sanitary line.

CONCLUSIONS:

Engineering Department was very receptive to the innovative concept.

Ross M. Guffei
RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File

DATED: April 30th, 1982

FROM: Ross M. Guffei

REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Captain Hauglum - City of Edmonton, Fire Department
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss innovative design concept and implications for fire fighting.

- Design has implications for spacing of fire hydrants. They are to be located within 90 metres of the face of a principal building on a site.

- The National Fire Code requires 20 feet (6 metres) of unobstructed access to principal building on a site. The Department interprets this as meaning 20 feet (6 metres) or paved access.

- Captain Hauglum has some reservations about the concept and the ability of the Fire Department to adequately fight fires at the back units. His reservations stem from the ease with which equipment can be transported to the back units (i.e. fire trucks, etc.). However, he did indicate that upon a specific submission the Fire Department would be willing to work out any problems that they would envision.

.../2

- The Fire Department might require that the driveways be posted as emergency access to the interior units and therefore ensuring that parked cars would not obstruct access for fire fighters.

CONCLUSIONS:

The Fire Department has some concerns about access to interior units. However, they are willing to discuss the concerns and resolve any problems when an actual application is submitted. Ultimate approval of the concept lies with the Planning Department and the Fire Department only advises on approvals.

It should be noted that for conventional subdivision designs fire equipment i.e. trucks, do not enter cul-de-sacs.

The major obsticle with the Fire Department appears to lie in the interpretation of the National Building Code.

It was agreed that the concept would be acceptable to the Fire Department subject to some detailed discussions and negotiations.

Ross M. Guffei,

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: April 29th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Terry Cavent, P. Eng. - Senior Distribution Engineer - Urban
Northwestern Utilities Limited

Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss innovative design concept and implications for gas servicing.

- Gas is on back property line.

- Some savings may occur in installation costs due to reduction of singled sided connectionns along edge of subdivision. This would be passed on to the homeowner through his gas rate, but would probably not be significant.

- Easements required for cross connections would have to be worked out for each individual subdivision but should not pose any problems.

.../2

CONCLUSIONS:

Terry was pleased to see new ideas coming forth. He had no difficulties with the concept. Details for servicing the concept will be addressed when an actual project is proposed.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: June 11th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Constable Hilton - City of Edmonton, Police Department
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss implications of design for police protection.

- Constable hilton was very interested in the design.

- He felt resident safety and vandalism would be reduced for the interior units due to limited access.

- The long driveways to the interior units may require lights.

- The cluster of four units would be ideal for the block parents program.

- Police protection would not be a problem as long as the units are addressed clearly.

.../2

CONCLUSIONS:

The City of Edmonton Police Department is very receptive to the concept.

Ross M. Guffei

RMG/tlb

TRITEK ENGINEERING LTD.

EDMONTON

MEMO TO: File DATED: April 29th, 1982

FROM: Ross M. Guffei REF: 161-01-0

RE: Innovative Subdivision Design - Approvals

ATTENDANCE:

Mr. A. Cooper - City of Edmonton, Assessment Department
Ross Guffei - Tritek Engineering Ltd.

PURPOSE:

To discuss innovative design concept and implications for the Assessment Department.

- The City of Edmonton uses eight formulas for the calculation of property taxes. The assessment is charged either on a front foot basis, or an area basis or a combination of both depending on the land use.

- There would not be any difficulties in identifying an appropriate formula for the innovative design concept.

CONCLUSION:

There will not be any difficulties with approvals based on assessment for the purposes of property taxes.

Ross M. Guffei
RMG/tlb

APPENDIX 4

PRELIMINARY COMMENTS FROM PLAN CIRCULATION
CITY OF EDMONTON

RECEIVED JUL 7 1982

PLANNING

THE CITY OF Edmonton

13th Floor
Phipps McKinnon Building
10020 - 101A Avenue
Edmonton Alberta
T5J 3G2

File: 200.8 - Servicing, Gen.

file 161-01-c

1982 07 05

Tritek Engineering Ltd.
12860 - 149 Street
EDMONTON, Alberta
T5V 1A4

Attention: Mr. R. M. Guffei

Dear Sir:

SUBJECT: Innovative Subdivision Design Concept

We have circulated the above mentioned proposal and have received the following comments:

Edmonton Power

1. Should this plan be implemented, Edmonton Power must be guaranteed that prospective homeowners will not request relocation of transformers or power base pedestals encumbering the frontage of their property.

2. Power should have a minimum horizontal clearance of 1.0 m from any pipe and should not be under the pavement (see attached drawings).

Water and Sanitation Department

1. A stormwater runoff coefficient of 0.30 is proposed. This seems to be low for such a high density, however, without the exact ratio of porous to non-porous surfaces, Water and Sanitation Department cannot comment further.

2. The submission states that all lots will drain to the streets. Back of lot swales (either between interior lots or interior and conventional lots) will not be permitted.

3. Storm sewer services may be required under certain conditions, (i.e. locations near embankments, high water table, etc.). A geo-technical report evaluating soil characteristics, ground water conditions, and other parameters related to percolation of roof leader discharges should be submitted where elimination of storm roof leaders are proposed.

4. To determine sanitary design flows, a per capita average flow of 0.35 cubic metres per day shall be used. Harmon's Peaking Factor should be applied to determine peak flow. The minimum peak factor shall be 2.5.

5. Servicing should be in accordance with the City of Edmonton Servicing Standards Manual.

Northwestern Utilities Limited

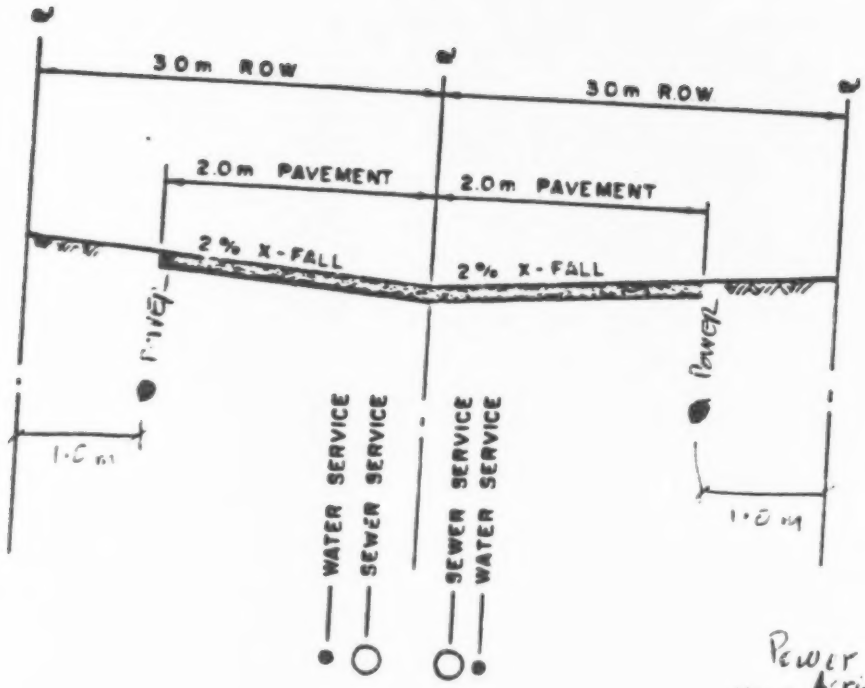
1. Northwestern Utilities Limited would need a 2.5 m easement at the rear of the conventional lots to service both the interior and conventional lots. Where they require a side lot easement (1.8 m), the lots could be made slightly wider or accommodated by creating a utility lot.

When further comments are received, we will forward them to you.

Yours truly

L. Z. Benowski
Sr. Development Engineer
LAND DEVELOPMENT COORDINATION BRANCH

AAP/ep
Attach.

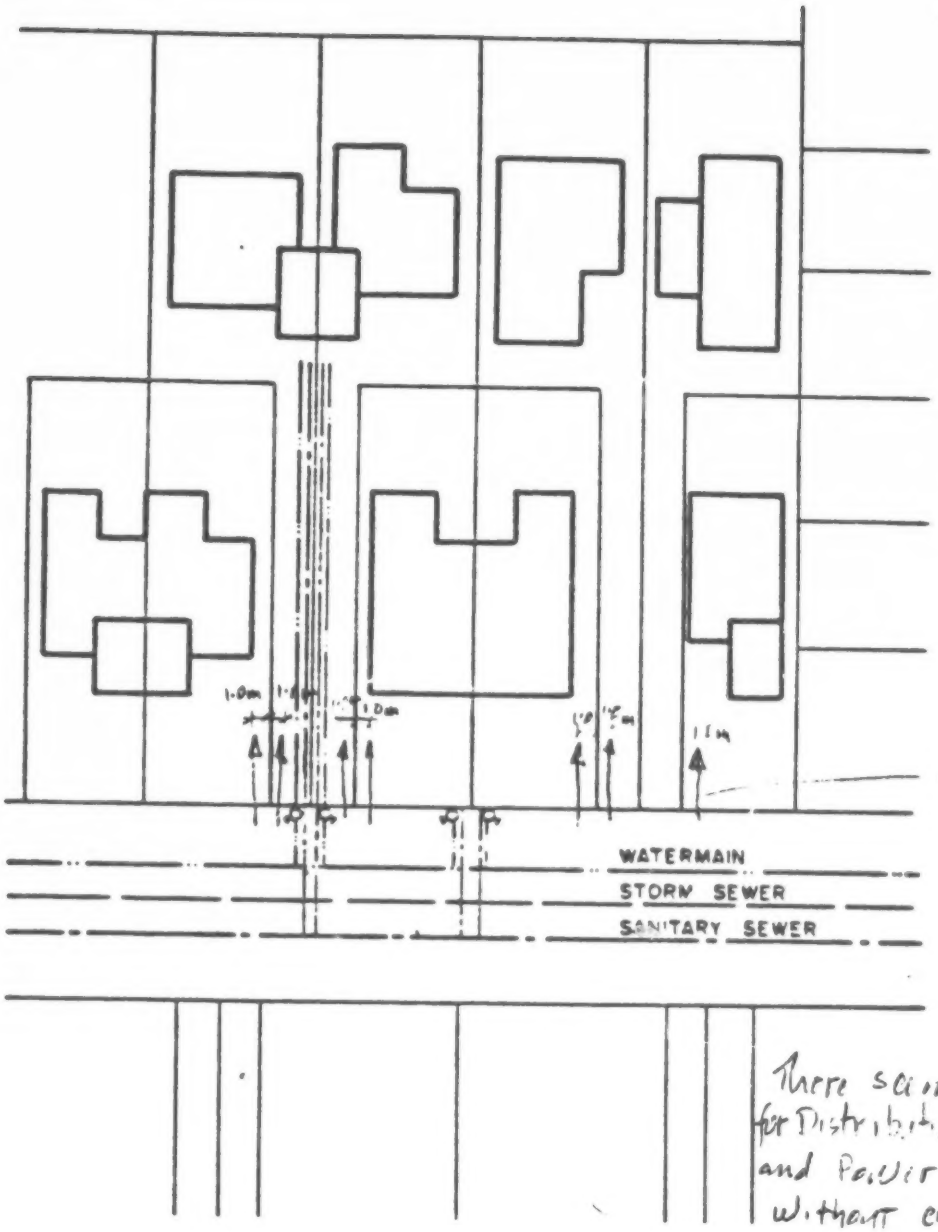


Power should have min. horizontal clearance of 1.0 m from any gas pipe & should not be under the pavement.

EI

INNOVATIVE LOT DRIVEWAYS

FIGURE 11



There seems to be no room for Distribution transformers and Power base/pedestal without encumbering either of the front lot.

INNOVATIVE LOT SERVICING

FIGURE 8

edmonton telephones

p.o. box 20500, edmonton, alberta T5J 2R4
phone 428-3311/area code 403
twx 610-831-1771

Reference No: 08294
1982 07 02

RECEIVED
JUL 6 1982
LAND DEVELOPMENT COORDINATION

LAND DEVELOPMENT COORDINATION		
AP	LB/	
BP	LL	
DB		
DC		
FW		
JL		
URGENT		
SEE ME		
ACTION		
REPLY		
NOTE & RETURN		
NOTE & FILE		
FOLLOW UP		
CIRCULATE		
FILE No.	200.8 - Serv. Se	

M E M O R A N D U M

TO: L.Z. Benowski
Sr. Development Engineer
Land Development Coordination Branch

FROM: W.H. Dubik
Outside Plant Engineering Director

SUBJECT: Innovative Subdivision Design Concept

Our comments regarding Tritek Engineering Limited's concept which pertain directly to the provisioning of telephone service, follow:

1. Telephone service could be installed by the owner in the right of way at a standard alignment. It would either have to be in conduit under the driveway or direct buried in the grassed area.

2. It is critical that the innovative subdivision design be identified to 'edmonton telephones' prior to the development agreement being signed to ensure that adequate servicing be made available. If either existing subdivisions, or approved subdivisions are changed, it would become the developer's responsibility to pay for all changes necessary to provide service to all customers.

WHD/cl

POOR

QUALITY

ORIGINAL